3D Printing Will Challenge IT
Microsoft's Next CEO Will Get Both Cheers and Jeers

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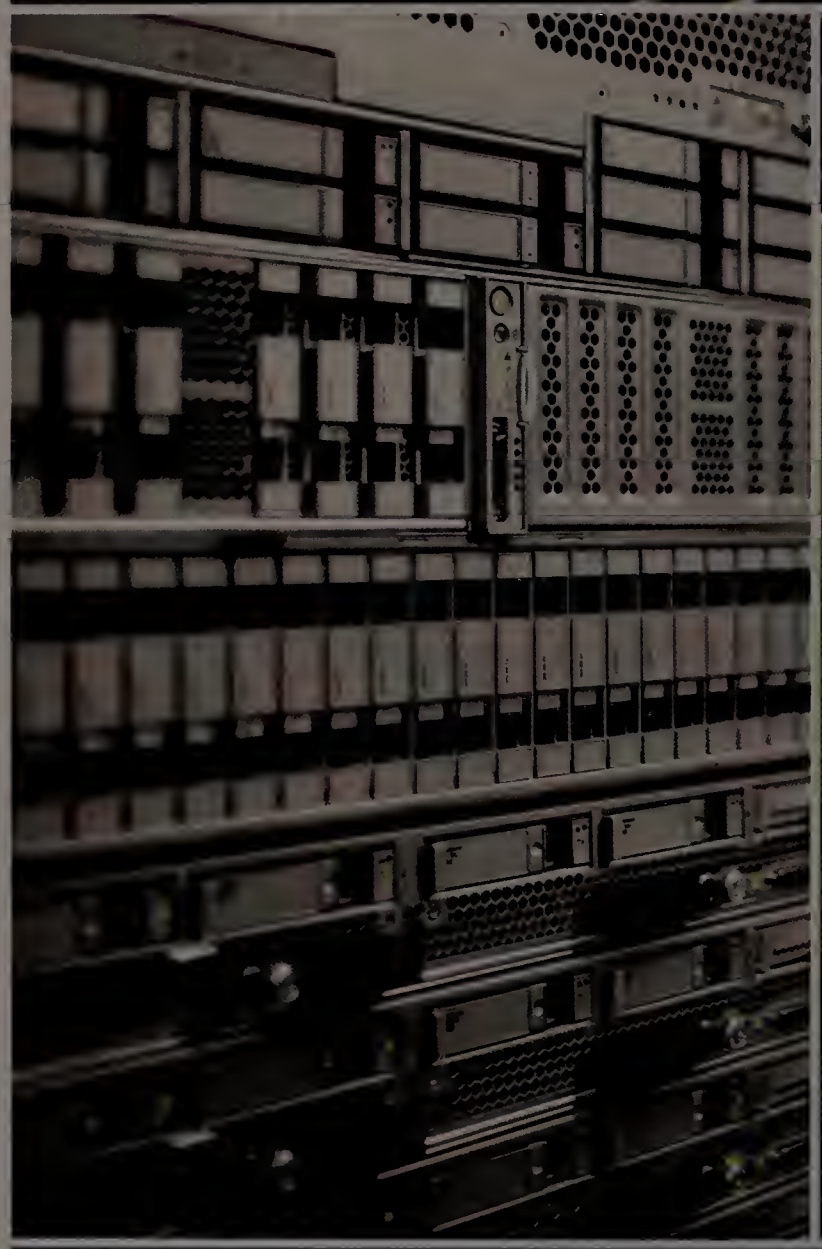
Think gamification is just a gimmick? Three smart companies beg to differ, and they've got the ROI to back up their stance.

GO

Business Operations Per Second: Unparalleled Cisco Server Performance.[1]

1,584,567



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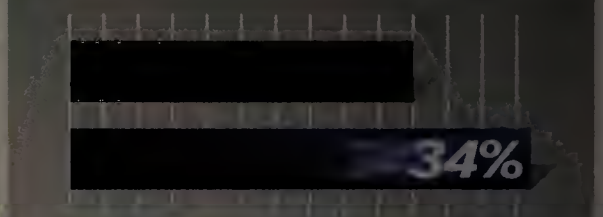
Cisco Unified Computing System



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1. Based on SPECjbb2005 benchmark on Cisco UCS C220 M3 server at 1,584,567 BOPS, 792,284 BOPS/JVM. 2. Based on TPC Benchmark C Results on 2 Processor Systems. Cisco UCS C240 M3 High-Density Rack Server with Oracle Database 11g Release 2 Standard Edition One, 1,609,186.39 tpmC, $0.47/tpmC, available 9/27/12 compared to IBM Power 780 Server Model 9179-MHB with IBM DB2 9.5, 1,200,011.00 tpmC, $0.69/tpmC, available 10/13/10. 3. Based on SPECjEnterprise2010_ benchmark with 8 total Java EE Server processors on Cisco UCS B440 M2 servers at 26,118.67 EjOPS compared to RISC-based IBM Power 780 at 16,646.34 EjOPS. SPEC®, SPECjbb®, and SPECjEnterprise® are registered trademarks of Standard Performance Evaluation Corporation. TPC Benchmark C® is a trademark of the Transaction Performance Processing Council (TPC). The performance results described here are derived from detailed benchmark results available at http://www.spec.org and http://www.tpc.org as of 1-15-2013.

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IT CAREERS

Self-Employment: The Next Big IT Trend

THE TECH INDUSTRY is seeing a shift toward a more independent, contingent IT workforce. And while that trend might not be bad for retiring baby boomer IT professionals, it could mean younger and midcareer workers need to prepare to make a living by going solo.

Around 18% of all IT workers today are self-employed, according to Emergent Research. This workforce is growing at the rate of about 7% per year, faster than the growth rate for independent workers in the overall workforce, which is 5.5%. Around 1 million people are self-employed IT professionals.

"Everyone is trying to figure out how to be more flexible and agile, cut fixed costs and move to variable costs," said Steve King, a partner at Emergent. "Unfortunately, people are viewed as a fixed cost."

Research firm Computer Economics has observed a similar trend. Over the past two years, there has been a spike in the use of contract labor among organizations with IT operational budgets of more than $20 million, according to John Longwell, vice president of research at Computer Economics.

The last time there was a similar increase in the number of contract workers was in 1998, a period marked by the dot-com boom and a flurry of remediation work in the run-up to Y2K, Longwell said.

The difference now, said Longwell, is that the use of contract or temporary workers is being driven not by a boom but by "a reluctance to hire permanent workers as the economy improves."

– Patrick Thibodeau

SUPERCOMPUTERS

Japan's Firm Exascale Plan Stands Apart

Japan's plan to deliver an exascale supercomputer in six years sets that country apart in the race to build these massive systems.

Japan's Riken Advanced Institute for Computational Science, which houses that nation's largest computer system, said it will lead Japan's exascale program, with "successful development of the exascale supercomputer scheduled for completion by 2020."

An exascale system "will be a great boon for science and technology, as well as industry," said Kimihiko Hirao, director of the Riken Institute, in a statement.

For its part, the U.S. is aiming to deliver an exascale system in the "early 2020s," a Department of Energy official said in November.

Researchers in the European Union, meanwhile, are developing an ARM-based exascale system and have set a delivery goal of 2020. That goal, though, doesn't have the stake-in-the-ground clarity of Japan's.

And China, currently home to the world's fastest supercomputer according to the Top500 ranking, is believed to have set 2018-2020 as a time frame for exascale delivery, but it has not yet made an official announcement.

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An exascale system could handle a quintillion, or a million trillion, floating point operations per second. That's about 1,000 times faster than a 1 petaflop system. The fastest systems in use today are well under 50 petaflops.

– PATRICK THIBODEAU

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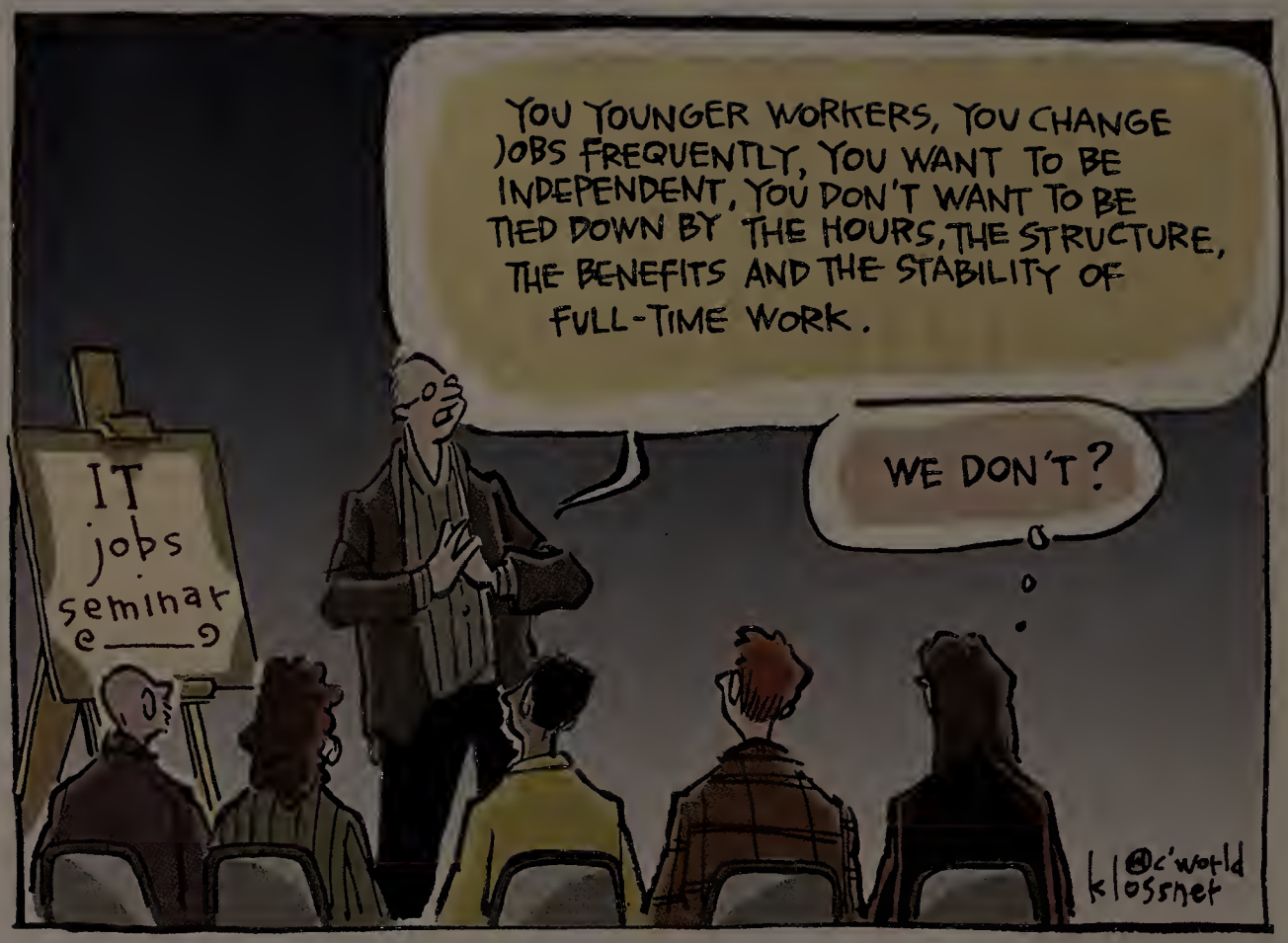
BETWEEN THE LINES

By John Klossner



CYBERSECURITY

Exchanges Unite to Combat Cyberthreats

THE WORLD FEDERATION OF EXCHANGES, a trade group representing 57 stock, futures and options exchanges, has established a committee to address cybersecurity for global markets.

The WFE's Cyber Security Working Group will be made up of security executives from some of the world's largest exchanges. Members will collaborate on a framework for sharing threat intelligence and information about attack trends, attack mitigation, security best practices, standards and technologies.

Founding members include Nasdaq OMX, the New York Stock Exchange, the Toronto Stock Exchange, Germany's Deutsche Boerse, the Saudi Stock Exchange, the Singapore Exchange and Brazil's BM&FBovespa.

The initiative comes at a time of heightened concern about cyberthreats to major exchanges. In July, the WFE released survey results showing that more than half of all exchanges reported suffering a cyberattack during the previous 12 months. The most common exploits involved distributed denial-of-service attacks designed to disrupt service.

Nasdaq suffered a glitch last year that resulted in an unprecedented trading halt for several hours. Though the outage was later traced to a connectivity problem between an exchange participant and Nasdaq's Securities Industry Processor system, it served as a reminder of the havoc a cyberattack could wreak.

The working group will initially focus on establishing communication channels and building trust among the members, said Mark Graff, Nasdaq's chief information security officer and chairman of the panel. Key topics will include the mechanics of sharing threat information in a way that doesn't trigger antitrust concerns, break confidentiality rules or violate regulatory controls.

Longer-term goals include devising ways to combat cyberthreats on an international scale and figuring out how best to communicate industry concerns to regulators, Graff said.

– Jaikumar Vijayan

Micro Burst

Worldwide spending on IT products and services will grow by

3.1%

in 2014, to $3.8 trillion.

OPERATING SYSTEMS

Unix Is Fading, But Its Successor Has Yet to Emerge

Unix at long last may be on the road to obsolescence, but it's still not clear what will replace it.

Gartner reports that its clients are planning to migrate away from Unix. And while some may take two, three or even five years or more to wean themselves off of the venerable operating system, the end is in sight.

That said, Gartner analysts – and the research firm's clients – are struggling to identify the operating system or other technology that will replace Unix in the data center.

The obvious candidates are Linux, Windows and mainframe operating systems, but there are others. The OpenStack cloud computing platform, the Hadoop big data framework and emerging cloud operating systems are increasingly popular choices for organizations building massively scalable, big data cloud environments, says Gartner analyst George Weiss.

An IT manager at a financial services firm, who asked to remain anonymous, said Unix runs many of his company's core systems and he doesn't expect his employer to abandon it anytime soon.

But he did agree that data center architectures could undergo a major shift. "The whole cloud OS is going to shake everything up," he said.

- PATRICK THIBODEAU

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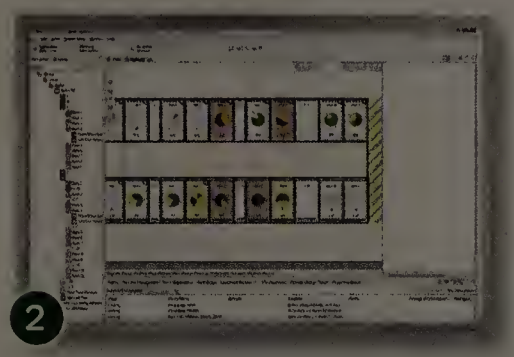

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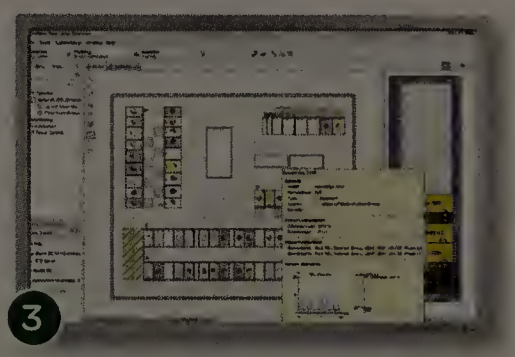

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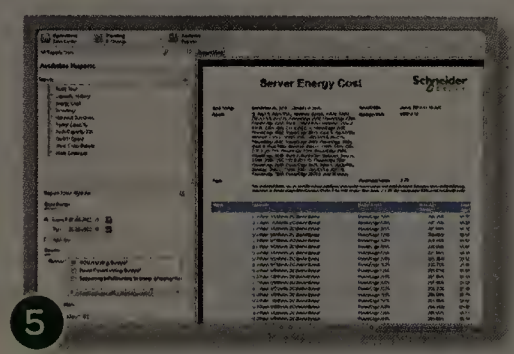

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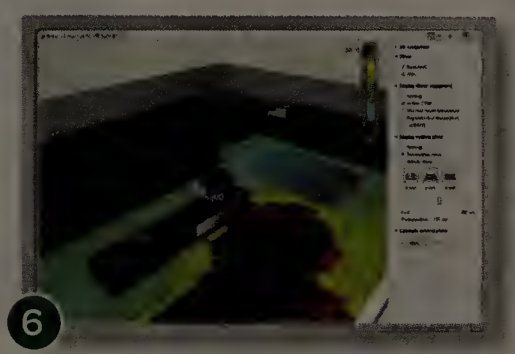

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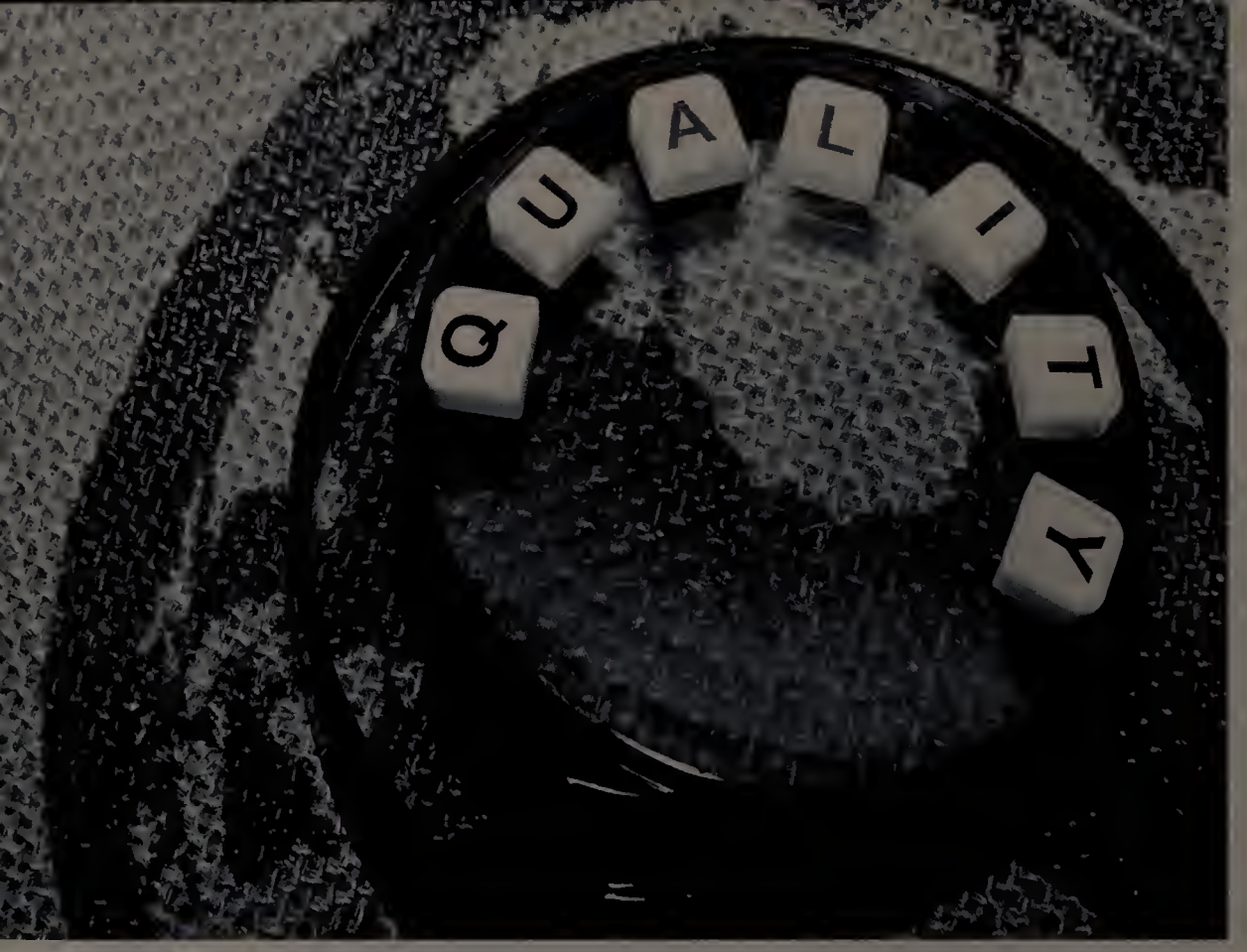

NEWS ANALYSIS

CMMI Cred Didn't Help Healthcare.gov Project

The biggest software failure of 2013 is proof that hiring a developer with a top CMMI rating doesn't guarantee that a project will succeed. By Patrick Thibodeau

CGI FEDERAL, the lead contractor for Healthcare.gov, is a veritable black belt in software development. In 2012, it became only the 10th company in the U.S. to earn the highest possible Capability Maturity Model Integration rating for software development.

But even with that top CMMI score, CGI couldn't ensure that the rollout of the Affordable Care Act website would be trouble-free. The problems with Healthcare.gov prompted the project overseer, the U.S. Centers for Medicare and Medicaid Services, to call for fresh help from Google, Red Hat and Oracle.

Though CGI Federal got a black eye from the Healthcare.gov rollout, CMMI didn't come under fire, and no one has said that it should. Project requirements were changed late in the development cycle, warnings weren't heeded, and the time allotted for testing was cut short. Those actions are all anathema to CMMI's careful and measured development processes.

That said, when initiatives based on CMMI processes run into problems, defenders often blame management and decision-making. In general, questions about CMMI rarely come up when a project fails. But when a project succeeds, CMMI often gets credit.

CMMI was developed some 25 years ago with the backing of the Department of Defense and the Software Engineering Institute at Carnegie Mellon University. Its process models are designed to help keep development projects on track.

The ACA project operated as a federally funded research and development initiative until it was shifted to the CMMI Institute about a year ago. The institute is a private, for-profit enterprise owned by Carnegie Mellon, and the move raised some user questions.

Getting CMMI certification is not simple or cheap. There are five levels of process maturity that together could take 10 years to achieve. Fulfilling the requirements for each level can cost a company thousands of dollars and may require dedicated personnel. Certifications require appraisals by independent experts, and periodic reappraisals.

Though the CMMI seal of approval is often a requirement of government software development contracts, the private sector has mixed views of its value.

Joel Basgall, the CEO of Geneca, which has helped build healthcare exchanges for private companies, says he has never had a client who insisted on following CMMI methodologies. "We compete more on what we can do, and how we do it, as opposed to the fact that we have a process," he said.

Basgall argues that government agencies should pick developers based on who has the best chance of success and drop the CMMI requirement. "[Every software development vendor] will have a process — nobody can function without one," he said.

CMMI supporters, however, argue that the process wouldn't have lasted for more than 20 years if it had little or no value.

Kirk Botula, CEO of the CMMI Institute, says the development process is now widely used in the private sector and has a strong following overseas — especially in China and India.

"You can learn [software development] through trial and error, which is how most folks do it," said Botula. "Or you can benefit from best practices, from proven approaches, and use it as a road map to align your business goals to your operational capability. [CMMI] is a consistent way of doing that." ◆

> **We compete more on what we can do, and how we do it,** as opposed to the fact that we have a process.

Microsoft announced in August that CEO Steve Ballmer would retire within the next 12 months, setting off a wave of speculation about who would succeed him. While the company hasn't named a new CEO yet, it's likely that some pundits will pan the choice while others will applaud it.

Ballmer's Successor Will Get Cheers, Jeers

If past CEO hirings at major tech companies are any indication, Microsoft's choice of CEO will be dubbed a dud by some and brilliant by others. By Gregg Keizer

NO MATTER WHO MICROSOFT NAMES as its third chief executive early this year, the pick will have experts and tech leaders questioning the sanity of the board, the person who took the job or — throwing caution to the wind — everyone involved. That's just how it works.

CEO choices, especially at a company like Microsoft, don't please everyone. There are as many opinions on the causes of any large company's problems — and how to fix them — as there are people capable of typing on a keyboard or tapping a tablet.

Here's one such opinion: "Let's face it, the current business model doesn't work, and you can't tweak it to improve it." That's what Dataquest analyst Kimball Brown said to *The New York Times* in July 1997 just after Apple tossed out CEO Gil Amelio, and began looking for a replacement.

Eight weeks later, Apple co-founder Steve Jobs stepped in as interim chief executive; he became the permanent CEO two and a half years after that.

Microsoft already appears to have lost the CEO candidate favored by Wall Street — Alan Mulally. The Ford CEO, who took himself out of the running last week, was one of several people who have been touted as a possible successor to Ballmer, 57, who abruptly announced his retirement in August.

Others include former Nokia CEO Stephen Elop and current Microsoft executives Tony Bates, Kevin Turner and Satya Nadella.

No matter who gets the job, whether an insider, an outsider, a dark horse or even a returning Bill Gates, fireworks are likely.

The Mulally candidacy alone caused Microsoft's stock to swing. Those in the financial community who lauded Mulally for the business and organizational acumen they saw in the turnaround he engineered at Ford were quick to sell Microsoft stock when he backed out.

Even so, the hiring of any outsider would likely trigger a loud outcry from some Microsoft insiders and followers who contend that an engineering-driven company can't be managed by someone who lacks direct experience in its eccentricities and disparate parts.

IBM was hit with such criticism 20 years ago after hiring Louis Gerstner to take over a tech giant with a mailbag of problems. Critics cited Gerstner's lack of experience running a tech company and scoffed at his work at RJR Nabisco and American Express.

A couple of months after his appointment, Gerstner responded to critics of his acknowledged lack of the "vision thing" by saying, "The last thing the company needs is a vision," adding, "It needs a series of tough-minded, market-driven strategies." In the end, Gerstner was credited with rescuing IBM and transforming it into the profitable services vendor it remains today.

And insiders haven't always worked out at major tech vendors.

In 1992, Digital Equipment's choice of insider Robert Palmer to succeed co-founder Kenneth Olsen as CEO was praised by analysts who lauded the new top exec for successfully driving the company's Alpha processor business. Within four years, DEC was gone, sold at a fire sale price to Compaq. Palmer got the blame.

So whoever Microsoft chooses, expect analysts, bloggers, pundits — and yes, reporters — to chime in with free, and at times free-from-reality, suggestions or demands. ◆

REUTERS / BRENDAN McDERMID

THE Grill

Tammy Bilitzky

This newly minted CIO plans to focus on scalability and automation.

Hometown: Chicago

Family: Married, with three adult sons and an adult daughter

Do you have a gadget you can't give up? My Samsung Galaxy S4

What's on your reading list? *The Sports Gene: Inside the Science of Extraordinary Athletic Performance*, by David Epstein

What's your favorite book? *Thinking, Fast and Slow*, by Daniel Kahneman

Do you read paper books or e-books? "Both. I shouldn't say that, but I do."

If you retired tomorrow, what would you do? Spend more time with family and working with charities.

PHOTOS COURTESY OF DATA CONVERSION LABORATORY

WHEN TAMMY BILITZKY *became CIO at New York-based Data Conversion Laboratory last March, it was her first time in a CIO role, and it was DCL's first time filling that post. Bilitzky, who had worked in senior-level technology jobs at other companies, says the move offered her a lot of new opportunities. "What's really great about that is you don't fall into old habits. You're really coming in fresh, objective and able to make the right assessments for the company," she says. "It's an opportunity you don't get in many firms." Here she shares more of her views on IT management.*

What was your biggest fear upon becoming a CIO? My fear was not maximizing the unique opportunity to define and execute the right technology strategy. Technology is what makes and breaks this company, and running the technology in a

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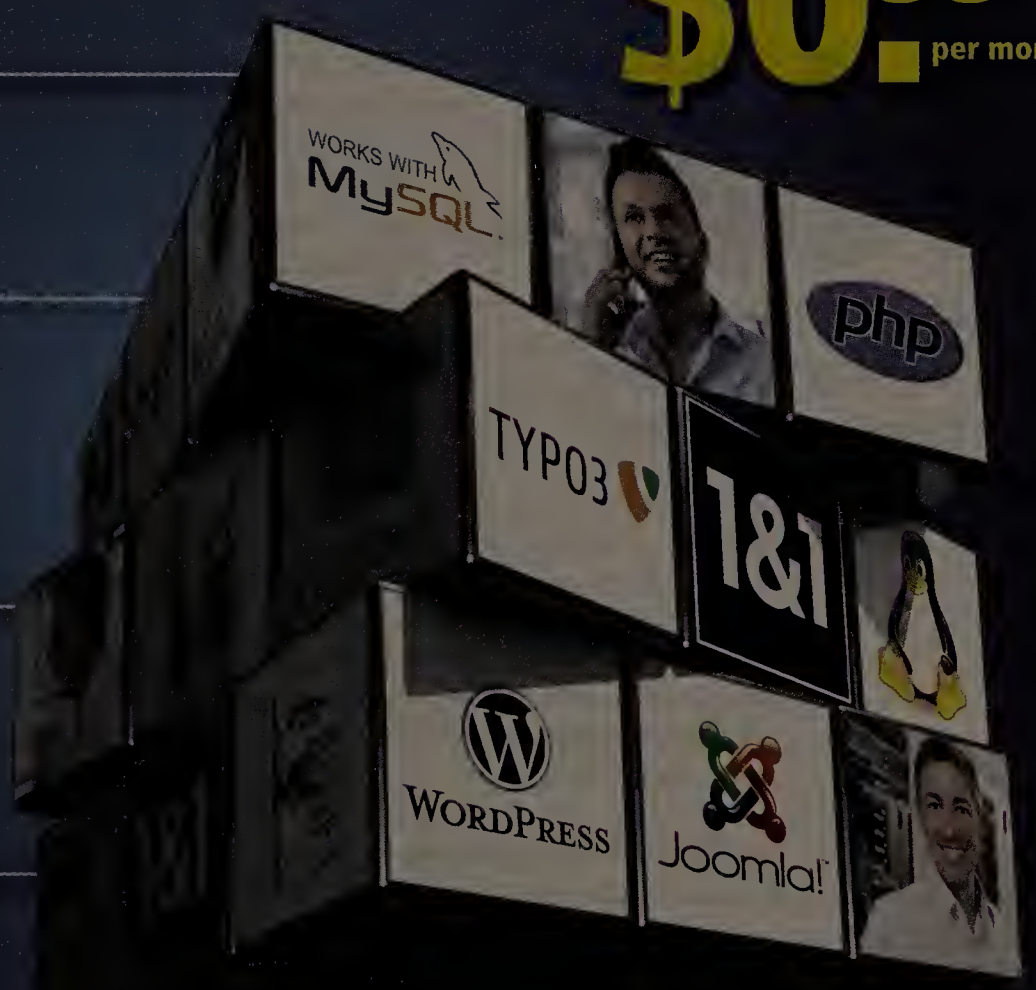

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> **There's always a risk of finishing a task just because you've started it and not because it's still essential.**

company like this is really business-critical. If you make a mistake in a nontechnology company, you have time to rectify it. But that's not the case here. Because technology is not a cost center, it's a profit center.

What's the biggest lesson that you've learned during your first year? That being CIO isn't as much about technology as it is being an expert in your business. To be truly effective, you have to know your business inside and out. You have to be a trusted adviser, a partner in defining and agreeing on your business strategy and leveraging technology to achieve that strategy. Everyone thinks that as long as you know technology you'll be fine. The key is knowing your business, and that's essential to ensuring that your recommendations are tailored to your firm, that they'll meet and exceed your business needs, that you can deliver solutions that will make the difference.

What's your strategy for year two? My two primary focus areas that have widespread impact on the firm are scalability and automation. Scalability: Making sure the infrastructure and our resources are positioned to scale effectively, to support our growing business and the growing volumes of data. And then increased automation: We want to continue to differentiate ourselves by not just having the best people but by having the best and most creative software and approaches to problems.

How are you approaching these two areas? For scalability, we're in the process of purchasing a large storage array. We have terabytes and terabytes of data. The company started small and kept growing, so this is also an opportunity to take a step back and look at our needs and data retention policies. We're purchasing a step-up in storage capabilities, and we're looking at our server topology. We've done some virtualization but we're looking at really scaling up and implementing a more sophisticated server architecture so we can provision quickly. We need to get things up and running quickly. The emphasis now is time to market. That's what we're scaling to do on the infrastructure side. On the automation side, we're looking at our system because some of the pieces were developed with older technology. We have a plan to migrate to newer technology [such as] .Net so we can do things in a much more dynamic fashion.

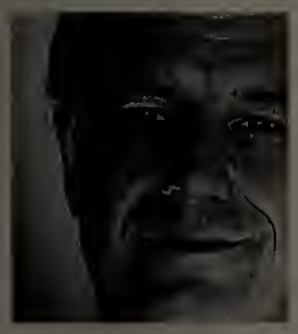
You're a Project Management Professional, a Certified ScrumMaster and a Six Sigma Green Belt. Which certification has been the most useful to you as a CIO? They've all been so immensely helpful, but in this role I'd go with my ScrumMaster, and layering it on my PMP. If you think about data conversion, by nature, it lends itself to agile methodology. But at the same time, Six Sigma I've used a lot on our deep dives into existing workflow.

What's the biggest challenge facing your team as a result of your company's growth? Maintaining its focus on business-critical initiatives. There's so much movement. There are so many areas where technology is a differentiator. And we find that our priorities change as we acquire new clients and delve into new industries. There's always a risk of finishing a task just because you've started it and not because it's still essential. We do constant checkpoints on active projects to make sure they're still as valuable today as when we started them. And if they're not, we reprioritize. I think that's a trap a lot of people fall into — not just in technology but in business.

How do you handle those checkpoints? I have meetings with each of my teams weekly, and I have full team meetings every two weeks. The projects have status meetings every two weeks. We have a structure where we're constantly stepping back and re-evaluating everything we're working on and making sure we don't get distracted by tasks that aren't as important to our clients and business strategy.

Doesn't that slow things down too much in a growing company? Time spent on the wrong project is not valuable. So there is a risk of shifting gears, but as long as you do it intelligently and manage it, I don't think so. And a lot of work is interconnected, so what we've done for one project, you can reuse. In my nine months here, I can't think of anything we've had to throw away. It's why I'm such a fan of agile. When you start the new sprint, you ask if this is still where we want to go. So we're not scrapping entire projects, you're shifting what you're going to be delivering. Because as you delve deeper in the project, you realize things you didn't know before.

— *Interview by* Computerworld *contributing writer* **Mary K. Pratt** *(marykpratt@verizon.net)*



BART PERKINS

3D Printing Is IT's Next Big Challenge

3D printing is already big, and it's getting bigger.

IS YOUR ENTERPRISE evaluating 3D printing? If so, make sure IT is involved in the investigation, even if it's in the preliminary stages. You can't afford to sit this out until a move to 3D starts to look real.

3D printing is already big, and it's getting bigger. According to the Wohlers Report, worldwide spending on products and services related to 3D printing hit $2.2 billion in 2012, and that figure is predicted to rise to nearly $6 billion in 2017. Rapidly evolving 3D printing technology is changing the way a surprising variety of products are produced. Today, Nike prints football cleats, Choc Creator prints chocolates and Continuum Fashion prints clothing.

General Electric hopes to print fuel nozzles for its new Leap jet engine. Current 3D technology can create a single-piece nozzle that is stronger and lighter than the existing nozzle, which is assembled from 20 separate pieces. Unfortunately, today's printers are too expensive (and slow) for GE's purposes. But because the technology is evolving so rapidly, the company believes that it could be cost-effective to print nozzles in two or three years.

In addition, GE plans to print spare parts in field locations around the world, reducing transportation and storage costs. Locally printed parts will significantly reduce delivery times and repair downtime, particularly for breakdowns that occur in remote areas.

In fact, many companies will move to a decentralized manufacturing model as 3D printing takes hold. Central operations will be reserved for making large or complex items.

Another appeal of 3D printers is that they offer broad technical benefits. They allow specification updates to be incorporated as soon as they're approved. There's no need to wait for a factory to be retooled to build the most up-to-date components. In addition, 3D printers make it possible to create very complex shapes that can be represented mathematically but can't be manufactured with conventional approaches.

But business executives are most likely to be swayed by the cost savings that come with 3D printing. As the technology matures, it will be possible to print complex, multipiece parts as single components, and the need to assemble and test multiple pieces will decrease. Factory resets will become quicker and easier; instead of costly production-line retooling, you'll merely load a new design into the printer. Factory staff will primarily focus on monitoring printers. Though centralized manufacturing in large plants has long been a reliable way to keep costs down, that model will become uncompetitive as it runs up against higher logistics costs and increased customer expectations for rapid product delivery.

So where does IT come in? The business benefits of 3D printing will be matched by some serious IT challenges. The folks in manufacturing, R&D and marketing who are most interested in 3D printing don't know much about evaluating how changes to day-to-day operations affect underlying IT systems. Most transactional systems will require major overhauls to support process changes in manufacturing and the supply chain. Many enterprises will also need to upgrade their IT infrastructures to support 3D printers. IT management must proactively insert IT's concerns about technology and costs into 3D printing conversations.

If you're in IT leadership, come to grips with the fact that 3D printing will be here sooner than you think. It will be your next big IT challenge. ◆

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GAMIFYING

GOT GAMIFICATION YET? If you don't, you're not alone — according to Gartner, less than 5% of organizations worldwide are using gamification. But get ready: Analysts expect enterprises to start embracing the technique in many areas over the next two years, and the impact, they say, could be far-reaching.

Gartner analyst Brian Burke defines gamification as "the use of game design and game mechanics in any kind of non-entertainment context." The technique involves adding an element of gaming to an application or platform. On an enterprise social site, for example, users could earn points by doing certain things — such as sharing information or helping a colleague with a problem — with the person who earns the

most points receiving some sort of reward.

The goal is to use game psychology and game design to change behavior, explains Thomas Hsu, the executive responsible for global social collaboration at Accenture, which uses gamification internally and advises its clients on the topic as well. "Game designers are incredibly good at designing things that are fun and motivating, whereas typical tools used in enterprises were not designed with that in mind at all."

The earliest adopters of gamification typically used it to form stronger bonds with customers. For example, SAP has gradually added more and more game-like features to its SAP Community Network to encourage participation among the 2.5 million SAP customers and business partners who use the 10-year-old network.

But now companies are gamifying internal applications to engage employees. Burke expects internal efforts to overtake consumer-engagement uses in the next year or so. By 2015, 40% of Global 1000 organizations will use gamification as the primary mechanism to transform business operations, Gartner predicts. "We see gamification being leveraged for change management," says Burke. "We see that as a big opportunity."

In terms of growth, gamification has a "land and expand" kind of profile, says Carter Lusher, an analyst specializing in enterprise applications at Ovum, a London-based IT research firm. A company will add gamification to something on a small scale and then, if the results are good, the technique will spread throughout the company. "People don't realize it's not about fun and games, but about creating engagement with employees, customers and partners," says Lusher. "Once they experience this themselves, then they get it."

Internally, gamification could be used to, for example, increase sales through a contest among sales reps or facilitate a software rollout by helping users to learn how to use the new system. "Every year, organizations collectively spend billions of dollars on new software, such as business analytics or CRM or HR packages, and the problem is the users don't use it or they only use part of it or they use it incorrectly," says Lusher.

Gamification can help solve that problem. Vendors that offer software as a service, for example, could gather data on how people use the software and where they get stuck, which will help the vendors improve their products or offer better training, says Lusher.

The technique can also help companies assess their workers' competencies. "Gamification generates a tremendous amount of data on your employees' skill levels," says Mario Herger, who worked on gamification at SAP until founding his own consulting company, Enterprise Gamification, in April of last year. "If you gamified every system and every interaction in your corporation, you'd know exactly what each person does and at what level of skill."

Even without that degree of penetration, gamified enterprise systems have the potential to help companies easily identify employees with especially valuable knowledge and skills. "This is potentially the largest and most valuable data cluster in the corporation," says Herger.

To find out how companies are using gamification and what benefits they are receiving, *Computerworld* talked to some early adopters. Here are the three most interesting applications we found.

» CTO Imran Sayeed: NTT Data's gamification efforts have delivered "a very clear ROI."

NTT Data Inc.

- **HEADQUARTERS (U.S.): Plano, Texas**
- **NUMBER OF EMPLOYEES: 60,000 total; 18,000 in North America**
- **NUMBER OF IT EMPLOYEES: Everyone is an IT professional, with the exception of "a couple of thousand support personnel," says CTO Imran Sayeed. "IT is our business."**

NTT Data started experimenting with gamification in 2011 as a way to encourage participation in its internal social network, which is called Socially. The company launched the network as a way to spark innovation and collectively find good solutions to customer problems quickly, says Sayeed, who's in charge of the application development and management division.

There was just one problem: When Socially first launched, only 400 of the 7,000 employees in the application development and management division joined. So Sayeed decided to offer what he called "karma points" to people who logged in, posted content and did other things on the platform. Each month, the person with the most points won a prize, such as an iPad. Within five months, participation had jumped to 4,000 employees.

DO'S AND DON'TS

ALTHOUGH GARTNER EXPECTS GAMIFICATION to take off within enterprises, it also expects some significant bumps along the way. For example, the research firm predicts that this year, 80% of gamified enterprise applications will fail to meet their business objectives.

More often than not, the failure will be due to poor design, says Gartner analyst Brian Burke. Often, companies design a game to achieve only corporate objectives (such as better-trained salespeople), without any regard for how employees feel about playing the game (salespeople won't play a game unless there's something in it for them, for example). And sometimes the objectives aren't well defined – for the company or the employee.

"If you don't know what you're trying to achieve, you're unlikely to achieve it," says Burke, noting that, instead of having clear-cut goals, a company will just say, "Let's try this." And then, he adds, "they look at the results and declare that a success."

To avoid those kinds of pitfalls, follow these tips from analysts and early adopters:

Start with material rewards, but then transition to more intrinsic forms of recognition. Prizes like retailer gift cards may attract newbies, but accolades that involve peer recognition or career enhancement may be more fulfilling in the long run. NTT Data found that intrinsic rewards, such as being tapped for new assignments, were more effective at getting and keeping experienced employees engaged in its social network. "These are things that you can't go out and buy in a store," says CTO Imran Sayeed.

Include elements to encourage cooperation over competition. A game can turn ugly when people start competing with one another. To avoid that problem, NTT Data came up with the idea of offering "share-only" points that people can give to their coworkers to thank them for being helpful.

Start small. Accenture initially offered just a handful of gamified elements in its online community, but gradually built up to more than 30.

Reward quality, not just quantity. One way to measure quality activity on, say, a corporate social network is to determine how much influence an individual has, says Thomas Hsu, Accenture's global social collaboration executive. So instead of looking at how often an individual posts, look at who's reading the posts and how much conversation they generate.

Expect people to try to game the system. In a way, that's good, says Sayeed, "because if they are trying to game the system, that means they are engaged, right?" Scams aren't hard to spot: It could be as simple as checking your social network to see whether the employees at the top of the leaderboard got there by racking up points with a lot of trivial posts. One way to address that problem is to reward quality over quantity (see above). But there's no cure-all, says Hsu. "Anytime you have gamification, it's not a matter of if people will game the system, it's a matter of what are you going to do about it," he says. "It's human nature to try to figure out how to beat the game."

TAM HARBERT

"The nice thing about a game is that it collects incredible analytics, so every manager can see the progress of their team members through the game."

IMRAN SAYEED, CTO, NTT DATA INC.

The collaboration that gamification helped stimulate has led NTT Data to create two new centers of excellence that are developing new products and services, says Sayeed.

Both centers — one that addresses regulatory reports used in insurance, the other focused on mobile testing services — came about after employees collaborating on Socially realized a custom service they were developing for one client would be of interest to other NTT Data customers.

In addition, NTT Data has launched a new consulting practice dedicated to gamification for its clients that want to explore the discipline.

So far, the centers have generated "about $5 million in new services," says Sayeed. Given that the company spent about $1 million to develop the new gamification practice and $200,000 to $300,000 to build Socially, "this was a very clear ROI," he says.

The company has recently expanded its internal use of gamification in two ways. In the spring of last year, it launched a training game, called NTT Data Samurai, that guides employees through a series of questions to assess leadership skills, then offers customized training in the form of a quest (users must meet certain challenges and attain certain levels in order to scale Mount Fuji). The application is helping the company pinpoint top performers as well as those who may struggle in certain areas.

"The nice thing about a game is that it collects incredible analytics, so every manager can see the progress of their team members through the game — where they did well and where they are having issues — so they can offer to help them offline," explains Sayeed. "It starts painting a complete and quantifiable picture of your existing talent in the organization."

In addition, the company is piloting another training program, a secret-agent-themed game for smartphones that's designed to help salespeople learn how to sell new products.

LESSONS LEARNED: Although it initially focused on extrinsic rewards like Apple iPads, NTT Data found that intrinsic rewards such as peer recognition were more effective motivators.

Along those same lines, if your organization's goal is to foster collaboration and communication, then gamification elements should be cooperative, not strictly competitive, Sayeed advises. To encourage this, NTT Data started offering Socially users "share only" points — points that employees can give to one another to thank them for good answers to questions or other types of help.

Finally, Sayeed warns, it's only natural that some employees

may try to game the system. For example, they might post a lot of unimportant or irrelevant information just to pile up points. NTT Data has moderators who watch for that type of activity.

SAP

- **HEADQUARTERS: Walldorf, Germany**
- **NUMBER OF EMPLOYEES: 65,000**
- **NUMBER OF IT EMPLOYEES: 1,900**

Gamification has produced some valuable benefits in SAP's customer-facing SAP Community Network (SCN), where members can earn points and badges, and can advance to higher levels, by helping fellow users in need.

The system has proved so popular that outsiders recognize it as a rating system for talent. "We've seen individuals use their SCN status in their résumés and on LinkedIn profiles," says Mark Yolton, former senior vice president of digital, social and communities at SAP. "Their SCN status really indicates a degree of expertise and collaboration above and beyond the norm." That can help people who are looking for new jobs or trying to impress their current employers, says Yolton.

Internally, SAP uses game elements on its corporate social network to promote participation and collaboration. It has also developed internal apps to encourage specific behavior. For example, SAP is piloting an app that uses game-like features to encourage carpooling among its employees.

The app, called TwoGo, matches up people planning to travel a certain direction at a certain time. Not only do employees get points and recognition for carpooling, but the app helps SAP further its corporate environmental goals and affords employees more chances to socialize and build bonds. SAP staffers who work in the company's Walldorf, Germany, headquarters may actually find the CEO in their car: Co-CEO Jim Hagemann Snabe has used the app to hitch rides, says Yolton.

SAP is also starting to apply what it has learned about gamification to products. For example, it's working on an internal travel expense accounting application that would reward employees with points for timely and accurate reporting, says Yolton.

"We often test things on ourselves first and then take it out to the market, so I would not be surprised if gamification was added to the travel expense reporting and accounting app that we sell in the marketplace," Yolton says. In fact, SAP is considering embedding gamification in most, or even all, of its software, he confirms.

LESSONS LEARNED: Make sure gamification aligns with the goals of the individual employees as well as the goals of the organization, Yolton advises. Gamification "can't be a management edict," he says, because making someone play takes the fun out of it.

Game designers are incredibly good at designing things that are fun and motivating, whereas typical tools used in enterprises were not designed with that in mind at all.

THOMAS HSU, EXECUTIVE, GLOBAL SOCIAL COLLABORATION, ACCENTURE

Accenture

- **LOCATION: Global; U.S. offices in New York, Chicago and elsewhere**
- **NUMBER OF EMPLOYEES: 266,000**
- **NUMBER OF IT EMPLOYEES: Undisclosed**

Accenture started using rudimentary gamification concepts early on, says Hsu, the firm's global social collaboration executive. In 2008, the company rolled out its Addo Agnitio Award to encourage employees to collaborate and share their knowledge via its online community.

Initially, employees earned points by doing simple things like filling out their online profiles and uploading content. The system has since evolved, and now more than 30 activities are tracked, says Steve Kaukonen, a senior manager on Hsu's team, with the goals of increasing productivity, reducing operating costs, spawning innovative ideas and improving employee engagement.

At first, Accenture rewarded participation with money; each "Celebrating Performance" point was worth $1. And top performers — those who shared the most content or whose blogs were read most frequently— were identified in the system with gold star icons.

Still, surveys revealed that employees didn't always feel they were being recognized or rewarded for collaboration, according to Hsu. So today their collaboration scores are included in their annual performance reviews.

Both Hsu and Kaukonen stress that gamification is just one component of Accenture's effort to encourage participation and collaboration, which in turn is part of a broad initiative to foster change management.

LESSONS LEARNED: Hsu recommends that companies think carefully about what motivates people as they add gamification. Consider not only what will interest them initially, but what will keep them engaged. Extrinsic rewards might work at first, for example, but if there's not some kind of intrinsic reward that comes from participating, then interest can quickly wane, he warns. ◆

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CLOUD APPS CONUNDRUM

Cloud-based security services are multiplying, with new offerings from startups and traditional vendors alike. But cost and customization can be deal-breakers for big companies. **BY NANCY GOHRING**

FROM AN IT PERSPECTIVE, Post Holdings, the company behind cereal brands such as Fruity Pebbles and Grape-Nuts, recently became a $1 billion, 100-year-old startup.

That's because last year it was spun off from Ralcorp Holdings and was left, literally, without an IT department. That turned into an opportunity for the newly hired IT team, which was faced with choosing all new applications for 1,300 workers. "We were starting from scratch," says Brian Hofmeister, director of enterprise infrastructure at Post.

THINKSTOCK

The IT team decided to go 100% cloud for all applications, and when it came time to choose an identity and access management tool, Post turned to Okta, which offers a single sign-on service for cloud apps.

Okta is among a handful of newer companies — including Ping Identity, OneLogin and Symplified — that provide cloud-based products to help IT departments and workers manage authorization and logins for users of hosted apps. Their offerings fall into a category known as identity and access management as a service (IDaaS).

Gartner says the IDaaS market is growing. The research firm estimates that IDaaS sales reached $180 million in 2012, and late in 2013 it projected that that figure would reach $265 million by the end of the year.

These services aren't just for organizations like Post that have gone all cloud; they're also for IT groups that must manage both cloud-based applications and on-premises systems.

In addition to the providers of the new IDaaS services, traditional identity and access management (IAM) vendors, including CA Technologies, SailPoint and IBM, are starting to support cloud apps. They're doing that via their own applications or through partnerships that allow customers to integrate enterprise cloud apps into their existing IAM processes.

That leaves enterprises with a number of choices for managing cloud apps.

The New Breed

Services like Okta, Ping and OneLogin let IT administrators tie cloud apps into a single directory so workers can have one username and password for all their apps. Employees visit a portal where they can see all the cloud apps they're authorized to use and sign in just once to access all of them.

Typically, businesses link the cloud IDaaS services into an existing Active Directory instance or LDAP directory, rather than re-create a directory. Because all apps are tied to a single directory, IT admins can quickly and easily deprovision users from all corporate services when they leave the company, or change the access rights of users who are promoted or otherwise change jobs.

OneLogin offers role-based access control, so IT can assign apps to roles within the company. IT can then attach roles to individual workers.

A unit of Reed Group, a U.K. recruitment agency, was in a situation similar to Post's and also ended up with an IDaaS provider. In 2007, Reed opened a jobs website called Reed Online. The offshoot grew into a 235-person operation with very different needs from the rest of the company.

Reed Online recently initiated an IT overhaul. Like Post, it's going primarily with cloud-based apps, although its top requirement is that applications be accessible through a browser, not necessarily that they be cloud-based. Google Apps, Jive, Salesforce.com and SAP Business ByDesign are among the apps that Reed Online is now using.

Things like the password policies we had internally were frustrating for users. HR had a password, Lotus Notes had another, Windows had another.

MARK RIDLEY, DIRECTOR OF TECHNOLOGY, REED ONLINE

"We knew that things like the password policies we had internally were frustrating for users," says Mark Ridley, director of technology at Reed Online. "HR had a password, Lotus Notes had another, Windows had another."

He began looking around for a single sign-on service and chose OneLogin. The value of such a service became obvious, says Ridley. Not only would a single password make life easier for workers, but IT could also implement a password-change policy that it could control and audit. The system would also allow secure logins for users when they're outside of the office.

But while Reed and Post are both going nearly all cloud, other businesses will need to offer users single sign-on for both cloud apps and on-premises systems. Many vendors — new and old — are starting to offer that capability.

One of those vendors is Centrify, which got its start by integrating hundreds of non-Microsoft on-premises apps into Active Directory and now has around 5,000 customers ranging from very small to very large organizations.

"The same problem we address for on-premises apps exists in the cloud," says Centrify CEO Tom Kemp. "So we built a cloud service that ties into the on-premises Active Directory to provide the same ability to make a heterogeneous environment look and feel homogenous from an authentication and auditing perspective."

SailPoint also started with IAM for on-premises apps but is now adding support for cloud apps. "We cut our teeth in large, complex enterprise environments," says Kevin Cunningham, president and founder of SailPoint.

The cloud-first providers are working in the other direction, also trying to become one-stop shops by adding support for on-premises apps, often through partnerships. For instance, OneLogin has a relationship with Aveksa, now owned by RSA, to offer customers IAM capabilities for on-premises apps.

Oregon's University of Portland wanted to offer single sign-on for both on-premises and cloud-based systems, a total of around 30 apps altogether. "This has been an ongoing nightmare for a few years," says Thomas Ank, who worked as senior network engineer for the university but has since joined Tech Heads as a consultant. The school had to manage passwords differently for many of the apps and IT was bogged down with password reset requests.

Ank set out to reduce the manual work and add some new capabilities for users. He had a handful of requirements based on user requests, including single sign-on, one portal for accessing all apps, user password management tools and the ability for users to close and reopen a browser without having to sign in again.

After looking at a number of offerings, including OneLogin and Microsoft's Forefront Identity Manager, the university chose a system from Mountain View, Calif.-based SaaSID. The school now offers its 5,000 students and faculty members a portal where they can log in once and access cloud-based apps, like Google Apps, as well as on-premises systems.

Cautions for Big Organizations

Going with IDaaS providers makes the most sense for small and midsize businesses that don't already have IAM systems or that are going primarily cloud for applications, says Andras Cser, an analyst at Forrester. Larger businesses may find that IDaaS offerings are too expensive, he says.

For big organizations, IDaaS doesn't always make sense. "If your user population is a lot more than 10,000 users, these cloud-based solutions can become prohibitively expensive," Cser says. For big businesses, buying and managing an on-premises product is typically a better deal, he says.

Also, cloud services typically don't offer the kind of customization that larger companies usually need, he says.

Post's Hofmeister agrees. "If you have something on-premises, you can tweak and customize it to your heart's content," he says, but in the cloud, "you have to settle for certain things." For instance, Hofmeister would like to be able to bulk-provision users. With on-premises software, his developers might have been able to work on that themselves, but instead the company has asked Okta for that feature and has to wait for it.

That said, he notes that Okta has been very willing to add new capabilities based on Post's requests.

The most important question surrounding these services may be the fact that, even though they're designed to increase security (since IT admins can require a certain level of password strength), some people wonder if they are actually inherently unsecure.

"Identity management has been a laggard [as a cloud-based service] because of the sensitivity around the data we're managing," says SailPoint's Cunningham. "Customers don't necessarily feel comfortable putting the keys to the kingdom out there in a hosted environment. If that information were compromised, the feeling is the bad guys know who to go to in organizations to bribe to get access to the information they want."

There's another reason that some people worry about the security around single sign-on products. "Some philosophies are such that they say, 'Look, maybe single sign-on is not such a good idea because if that environment is compromised, now you have one way to get into all your critical apps,'" says Sasan Hamidi, chief information security officer at Interval International, a Miami-based company that runs a vacation timeshare exchange.

While Hamidi doesn't find the issue to be enough of a deterrent to not use IDaaS, he says he hears other CIOs and CTOs express concerns about security. They say that without a single sign-on environment, if one system is compromised, at least the problem will be limited to that one system, he explains.

The University of Portland's Ank says that logic is flawed and he points out the downsides to existing practices. Even without a single sign-on setup, his students often employed poor password practices, like using the same password for all of their services, so if one was compromised others could be, too. And even if they do use multiple passwords, they're authenticating against a common back-end database that itself could be compromised.

Ank feels that a single sign-on product is more of a security benefit than a loss. "If we're using single sign-on, our ability to mitigate lost passwords improves. We have a single place to shut that account down," he says.

Another issue is the way the services interface with existing directories from a security standpoint. For instance, Centrify's IDaaS acts like a gateway, connecting to an existing Active Directory database. Some other services, however, replicate all or some of the data in Active Directory into the cloud service.

Some organizations worry about storing that kind of data in the cloud. For security reasons, they'd rather store credentials in their own Active Directory databases than let their third-party vendors copy the information.

Okta always stores some end-user information online, including first name, last name, Okta username and email address. Businesses that are worried about transferring additional user information to Okta can treat an on-premises directory, like Active Directory or LDAP, as the master, says Eric Berg, a vice president at Okta. In that scenario, Okta doesn't store user credentials like an Active Directory username and password. It instead delegates authentication attempts back to the Active Directory.

If you have something on-premises, you can tweak and customize it to your heart's content. [But in the cloud], you have to settle for certain things.

BRIAN HOFMEISTER, DIRECTOR OF ENTERPRISE INFRASTRUCTURE, POST HOLDINGS

For his part, Berg says there are upsides to storing user information in the cloud. For instance, a business could manage employees in Okta via Active Directory while also managing some users, like customers and partners, that don't have information stored in Active Directory. Those external users would instead have their identity information stored at Okta.

The setup would also allow a business to essentially consolidate multiple Active Directory instances by storing user information from the multiple directories in Okta. That way, an administrator could manage one directory instead of several.

The IDaaS market is very competitive, so vendors continually add features to make their tools more secure and more appealing. And users are noticing: As Reed Online evaluated vendors and learned about the many upsides to hosted ID management services, Ridley says, "It became obvious what the value was." ◆

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When it comes to purchasing hardware, software and services, IT knows best. Right? Maybe not, say today's specialized procurement pros. **BY MARY K. PRATT**

[WHO DECIDES WHAT TECH TO BUY?]

LOWE'S KNOWS a thing or two about buying and selling, so it means something that the Mooresville, N.C.-based home improvement retailer established a procurement department to help its various divisions make better deals.

Now Tom Nimblett, director of procurement for the IT, HR, finance and Lowes.com divisions, reaches out to IT managers at all levels, including the CIO as needed, to consult on tech purchases — which are not inconsiderable, given the company's 1,000-person IT staff and annual IT budget of more than $1 billion.

An expert in procurement, Nimblett, who reports to the CFO, leads a 12-member team that knows how to negotiate contracts that protect corporate information, mitigate risk, ensure consistency and save money — even on complex transactions involving hardware, software licenses and cloud services.

THINKSTOCK

Nimblett is aware that the Lowe's process differs from those in place at many other organizations, where CIOs and the IT department take charge of buying technology and still retain tight control over it.

"The theories from the past, and a lot of organizations still have those, say that because it's an IT product, no one else is intelligent enough to know about it or is intelligent enough to negotiate for it, and therefore it's held within IT," says Nimblett, who worked in IT at other Fortune 500 companies before moving into procurement at Lowe's.

But when purchasing is siloed in that way, not only do you tie up talented IT people doing a job that's not their core competency, you often end up with deals that favor vendors and not the company, say both IT and procurement experts.

Emerging best practices for IT procurement mitigate those drawbacks by bringing procurement professionals and technologists together.

Consider how Nimblett's team recently approached a deal with a vendor to provide IT services in the field. The procurement group contributed its expertise on sourcing, while IT brought expertise on specifications and technical designs. Together they were able to confidently review information provided by the vendor.

"The partnership allowed emotion and opinion to be tabled while a common solution was found," Nimblett says. "The end result created a well-defined service model for our stores at a cost-effective price."

The Specialized Skills of Procurement Pros

In this new partnership model for IT procurement, the key components of the job aren't setting parameters, establishing budgets, detailing equipment specs or even drafting contracts — though all of those things are still important. It's about rolling up all those pieces into the task of relationship management so the organization can maximize all the benefits it can get from the vendor, whether it's low cost or expert support — or both.

And that task requires a specialist who has skills beyond those that techies typically possess (see story, at right).

"IT managers are quickly learning that having a good procurement pro on their side can mean significant gains in efficiency, cost savings and overall effectiveness," says Mike Lee, procurement supervisor at the University of California, Riverside.

The benefits don't end there. Another return is right-sized contracts. Procurement specialists working with IT can structure deals that allow services or equipment — as well as costs — to grow and shrink over the course of a contract's life.

Another benefit is consistency. Because procurement is the sole thing these professionals focus on, they're able to streamline and replicate purchasing processes, which creates efficiencies that in turn save money.

And skilled procurement pros can keep an eye on the fine print, since they generally know what parts of standard vendor contracts need to be reworked to better protect their employers.

The position also gives companies leverage with vendors. Procurement specialists know how to cultivate relationships with vendors to develop partnerships where there's an exchange of ideas that can benefit the organization. They may even enlist vendor salespeople as allies, knowing that they can offer insight on how a business can maximize the value of their company's products through innovative uses or streamlined processes.

Another benefit is governance and risk mitigation. Sure, it's possible for IT to manage contracts over the course of their lifetime, but it's not always probable. Having procurement professionals who count this among their primary responsibilities ensures that the task gets the attention it deserves. That means, in turn, that the organization will be more likely to know in advance about any issues, such as mergers or bankruptcies, that could affect a vendor and its delivery of IT products and services.

Procurement partnering isn't about IT blindly handing over responsibilities or gleefully dumping a mountain of routine paperwork on the desks of highly skilled sourcing staffers. Each side must bring specific skills that complement the other's areas of expertise, and both sides need to learn about each other's roles.

It doesn't much matter where IT purchasing decisions ultimately reside — with the CIO, the CFO or the COO — as long as that collaboration and teamwork are in place, says Jim Jones, a managing director in KPMG's CIO Advisory service network. "The model we've seen not work well is where IT tries to procure

IT PROCUREMENT: Key Skills

Experts agree that the task of buying IT equipment and services requires a professional with a number of key skills, including these:

People skills. Brian D. Kelley, CIO of Ohio's Portage County, says procurement professionals need to be able to work through problems and bring parties to consensus and agreement.

Communication skills. Procurement specialists must be good communicators in order to cultivate relationships with both the IT department and vendors, explains Patrick Campbell, a senior consultant and instructor with International Computer Negotiations, which provides consulting and education services related to IT procurement.

Experience structuring contracts. Buyers need to be able to construct deals that include incentives and penalties, payments tied to milestones, nondisclosure agreements and other elements. They also need to be able to work with lawyers to fine-tune those terms and conditions.

An understanding of technology. A procurement professional must be familiar with the organization's IT systems and understand how technology helps the organization meet its objectives. "There has to be credibility. An IT director or an IT officer or a CIO isn't going to feel comfortable handing over a [purchasing] negotiation to someone who doesn't know IT," says Campbell.

– MARY K. PRATT

without procurement skills or procurement tries to procure without IT skills," he says.

Know the Industry, Know the Vendors

UC Riverside's Lee agrees with that assessment. "The new purchasing pros had better know not only the hardware and software that their organizations might be using, but also how to explain the terms and conditions of a contract in plain English to IT and [how to] analyze the end result for them," says Lee. "At the same time, they have to know the industry. Who are the players and what are they doing? What is going to affect the delivery of my order?"

Lee sees vendor management as a key aspect of the job. "It's about having and keeping the right vendors for the job in your pocket who will respond to your needs," he says. "Do they have the connections to get the hard-to-get items when you need them? Do you have to worry about their pricing, or can you trust them to treat you fairly every time?"

Lee, a veteran purchasing professional who oversees two subordinates, serves the entire UC Riverside campus, including its computing and communications department. Some managers in the field have limited buying authority and can purchase PCs, printers and similar items, although his group provides them with policy, procedure and guidance on those purchases.

Lee works with senior IT managers who report to the CIO. Recently, a group worked together to purchase a point-of-sale system to support the school's dining and retail operations. IT asked for direct support for this acquisition, opting to use a formal bid process rather than a sole-source request that was first considered, Lee explains.

By working together and going with the bid process, Lee says, the university not only ended up with the supplier that IT had originally wanted, but also scored $89,000 in cost reductions and tighter network security measures.

Partnering on the Big Purchases

Hank Zupnick, CIO at GE Capital Real Estate in Norwalk, Conn., and an active member of the Society for Information Management (SIM), works with his company's sourcing division to make IT purchases, typically relying on the four sourcing staffers who are dedicated to IT, which has about 300 staffers and contractors.

Those sourcing professionals know how to research vendors, negotiate contracts and determine values in deals, he says. IT knows what it needs from a piece of equipment or from a service provider and will set parameters for sourcing to follow.

That said, there is flexibility to the partnership, Zupnick explains. Because the requirements on some items, such as laptops or printers, are clear-cut and information on vendors is plentiful, purchases of those items can be handled more independently. IT plays a larger role for technology that's less commoditized, such as customized software or equipment made by small vendors that don't garner a lot of reviews.

IT and procurement at GE Capital Real Estate recently worked together on contracting for a new property management system, a key business process for the company. The team jointly compiled a short list of vendors, with procurement vetting the vendors from financial and operational risk perspectives. Once a vendor was selected, procurement took the lead in negotiating the financial component of the licensing and customization agreement.

Zupnick advises organizations to also involve their legal departments, to make sure contracts accurately reflect whatever deals are negotiated and protect both parties' interests. As he sums up: "A good negotiation is when everybody is happy with it."

IT Still Knows Best?

For all the enthusiasm of IT pros like Zupnick and procurement specialists like Lee, not everybody has adopted the partnership approach to IT purchasing. Indeed, most companies still handle IT procurement either entirely in IT or entirely in a corporate procurement office, says Cynthia Farren, a Walnut Creek, Calif., consultant who specializes in software asset management.

"There are very few who have had the maturity to see that they need both sides," she says.

> **"We can't rely solely on others outside our department to manage [procurement] because technology is so unique."**
>
> **BRIAN D. KELLEY,** CIO, PORTAGE COUNTY, OHIO

And then there are IT leaders like Brian D. Kelley, who are somewhat skeptical of the need for a separate procurement expert — at least under certain circumstances.

The CIO of Ohio's Portage County, Kelley has an eight-member IT team and obviously does not have a separate procurement person; IT purchasing decisions fall to him and two others within his department, which has an annual budget of $1 million and serves 1,300 employees.

Although he acknowledges that some purchases, such as printers or desktop computers, could be handled outside of IT, Kelley says he wants his department to be involved in buying all IT equipment and services so it can ensure two things: That the selected vendors can deliver on all requirements; and that contracts address the various scenarios that can affect delivery.

"I think that IT departments have to have in-house the skills and expertise to be able to manage vendors, manage contracts and manage the procurement process," says Kelley, who also is an active SIM member. "We can't rely solely on others outside our department to manage that because technology is so unique."

That doesn't mean that he's not open to collaboration when it's appropriate. One recent project involved connecting HVAC control systems to the IT network. IT and purchasing worked closely to coordinate implementation phases and connectivity requirements, Kelley says.

In general, Kelley sees IT's job in joint purchasing projects as "maintaining an active role, giving input when necessary and steering the process when there are many different variables" — and most IT managers would likely agree with that assessment, procurement partner or no. ◆

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. You can contact her at marykpratt@verizon.net.*

Security Manager's Journal

MATHIAS THURMAN

Siccing MDM on Personal Devices

Their use has gotten out of control. And mobile device management will play well with newly deployed NAC.

WE LOOKED into mobile device management (MDM) in 2012, but the time didn't seem right. Now, some 18 months later, things have changed, and MDM is looking more like a good fit for us.

There's no question that we need better control over the plethora of personally owned mobile devices connecting to our corporate network and accessing applications that contain sensitive company data. Naturally, we have policies that forbid users from connecting a personally owned device to the corporate network, but they aren't enforced. As a result, we have too many personal iPhones, iPads, Androids and PCs on our network.

Back in 2012, we didn't feel that the MDM market was mature enough to fork over up to $300,000 per year to solve a problem that was somewhat mitigated by existing technology and processes. The mitigation came in part from the fact that users need a domain account to connect to our corporate wireless access points. We don't advertise the SSID and we have a strong password that enables encryption. But the "security by obscurity" approach only goes so far, and it didn't take long for employees to spread the word about how to connect personally owned devices to the corporate Wi-Fi network.

Moreover, we were using Microsoft ActiveSync to force a security policy to devices that were synchronized to obtain email. That served us well for several years, but in the current age, when mobile devices are being used to store and process ever more sensitive data, ActiveSync just doesn't scale or meet the heightened security requirements.

the discussions about security! **computerworld.com/blogs/security**

As I said, the MDM market just wasn't mature a year and a half ago. There was talk of buyouts, compatibility issues and a lack of features. We couldn't find enough satisfied customers to make the investment seem worthwhile.

Much Has Changed

Today, though, prices have dropped, and the market has matured. What's more, our recent deployment of network access control (NAC) technology should complement an MDM deployment.

"We need better control of the personally owned mobile devices connecting to our network.

Trouble Ticket

» Too many personal smartphones, tablets and PCs are being connected to the network.

» Take a new look at mobile device management to see how effective it can be at reining it all in.

NAC is aimed at the desktops on our network. We're still working out the kinks, trying to eliminate false positives and establish a process for exempting certain devices. When we do turn on enforcement and start blocking non-corporate devices, we want to use MDM as the control point for the identification of registered mobile devices.

MDM will help us enforce our current mobile device policy: We can set it to accept only "strong" passwords and to initiate device lock after a defined period of inactivity. We can also use it to wipe devices that go missing.

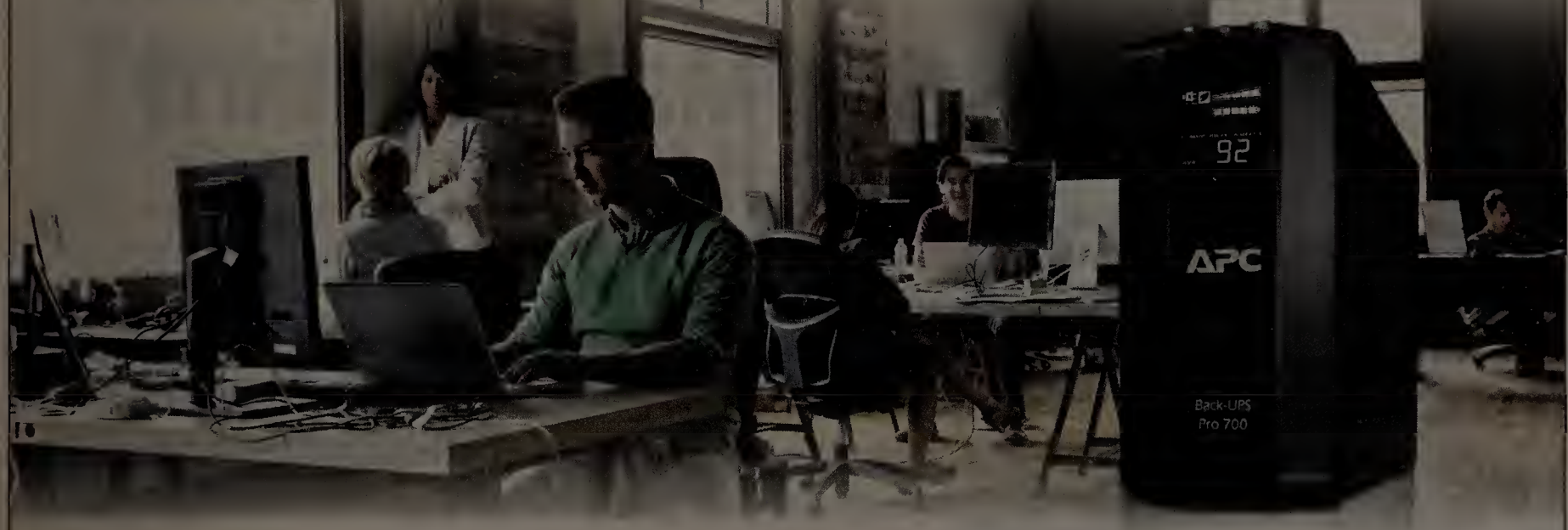
Even better, though, MDM will let us extend our policy to identify unlocked or jailbroken devices and require compartmentalization of data. (Compartmentalization involves the separation of personal and corporate data; it will provide some flexibility, so that when an employee leaves the company, we can wipe only our company's data and not any of the employee's personal data.) We can also create a corporate application store, which means that when an employee leaves, we can just wipe the data associated with those corporate apps, leaving personal apps alone.

So here's the vision: Once NAC and MDM are in place, we will be able to easily identify any unregistered devices and bar them from the network. If users want to register any of those banned devices, they will have to comply with the security policy in exchange for seamless access to our network and to certain applications.

I'll let you know how close we get to achieving that vision. ◆

This week's journal is written by a real security manager, ***"Mathias Thurman,"*** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

40 million computer users *don't trust* the power grid.



But they *do trust* APC by Schneider Electric Back-UPS.

Power protection and real energy savings

For years you've relied on APC™ by Schneider Electric Back-UPS™ to protect your business from expensive downtime caused by power problems. Today, the reinvented Back-UPS does even more. Its highly efficient design noticeably reduces energy use, so you start saving money the minute you plug it in. Only APC by Schneider Electric Back-UPS guarantees to keep your electronics up and your energy use down!

Unique energy-efficient features

Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby. Automatic voltage regulation (AVR) adjusts the undervoltages and overvoltages without using the battery. With our patent-pending AVR bypass, the transformer kicks in only when needed and automatically deactivates when power is stable. Plus, our highly efficient designs reduce power consumption when power is good and extend runtimes when the lights go out. Together, these power-saving features eliminate wasteful electricity drains, saving you about $40 – $50 a year. And managing today's Back-UPS couldn't be easier thanks to an integrated LCD that provides diagnostic information at your fingertips.

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The award-winning Back-UPS provides reliable power protection for a range of applications: from desktops and notebook computers to wired and wireless networks to external storage. It's the trusted insurance you need to stay up and running and reliably protected from both unpredictable power and energy waste!

Keep your electronics up and your energy use down!

Back-UPS models are available with the features and runtime capacity that best suit your application, and many models have been designed with power-saving features to reduce costs.

The High-performance Back-UPS Pro Series

High-performance Back-UPS Pro units deliver cost-cutting, energy-efficient features. Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby, eliminating costly electricity drains. *(BR700G shown above)*

The energy-efficient ES 750G

The ES 750G boasts out innovative power-saving outlets, eliminating wasteful electricity drains when equipment is not in use.

- 10 outlets
- 450 watts/750 VA
- 70 minutes maximum runtime
- Coax and telephone/network protection

The best-value ES 550G

The ES 550 uses an ultra-efficient design that consumes less power during normal operation than any other battery backup in its class, saving you money on your electricity bill.

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- 43 minutes maximum runtime
- Telephone protection

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OPINION

PRESTON GRALLA

Apple Still Makes It Hard To Think Differently

> Apple is doing the bidding of the Chinese government by banning certain apps in China's App Store.

APPLE, which famously fashioned itself as a friend of rebels and free-thinkers, has once again taken the side of censors and autocrats. Lured by profits, the company is doing the bidding of the Chinese government by banning iPhone and iPad apps in China's App Store.

The latest instance came in late October, when Apple pulled the Free Weibo app from the App Store in China. Free Weibo was designed to allow people to read censored comments on China's popular microblogging platform, Sina Weibo. Sina Weibo is a frequent target of censorship. For example, when the Chinese artist and activist Ai Weiwei used the site to ask people to post information about the disastrous 2008 Sichuan earthquake, his messages were deleted and his account pulled.

Earlier in October, Apple banned the OpenDoor app, which allowed iOS users to bypass the Great Firewall of China, a facetious name given to a very serious effort to stop people inside China from visiting sites the government doesn't want them to see.

Going back further, Apple has banned apps that refer to the Dalai Lama and Uighur activist Rebiya Kadeer, as well as a news app by New Tang Dynasty Television, a satellite broadcaster based in the U.S. that was founded by Falun Gong members.

The banning of apps that mention the Dalai Lama is particularly ironic, given that Apple featured a photo of him in its well-known "Think Different" marketing campaign. That campaign praised "The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. ... They push the human race forward. ... The people who are crazy enough to think they can change the world, are the ones who do."

But one of them stands in the way of Apple's profits. So goodbye, Dalai Lama.

Apple would do well to follow the examples set by Yahoo and Google. Several years ago, Google decided it would no longer censor its search results in China after attacks emanating from there targeted the Google and Gmail accounts of Chinese human rights activists. Google's chief legal officer, David Drummond, explained in a blog post: "These attacks and the surveillance they have uncovered — combined with the attempts over the past year to further limit free speech on the web — have led us to conclude that we should review the feasibility of our business operations in China. ... We recognize that this may well mean having to shut down Google.cn, and potentially our offices in China." Google has indeed suffered financially from the decision. But it recognized that sometimes moral obligations trump the absolutely fattest profits.

Yahoo went through an even more wrenching time. In 2004, its Hong Kong unit turned over information from the email accounts of two dissidents to Chinese authorities, and as a result both men were jailed. During congressional hearings in 2007, Yahoo co-founder and then CEO Jerry Yang apologized to the families, and the company later settled suits with them. Yahoo has since co-founded with Google the Global Network Initiative, which tries to protect Internet freedom around the world.

During the 2007 hearings, the chairman of the House Committee on Foreign Affairs, the late California Democrat Tom Lantos, told Yang and Yahoo's general counsel, Michael Callahan, "Much of this testimony reveals that while technologically and financially you are giants, morally you are pygmies."

The same can be said about Apple today. It's time for the company to live up to its self-created image as the friend of all those who think differently than governments want them to. ◆

Preston Gralla is a *Computerworld.com* contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

Career Watch

ASK A PREMIER 100 IT LEADER

Robert Krestakos

The Steelcase CIO answers questions about **moving to the private sector** *and more.*

What does it take for someone who has been consulting to the public sector in the area of project management to move into the private sector? Project management, by its nature, translates pretty well from the public to the private sector, so you have the advantage of having transferable skills. What may be very helpful for you is to get solid representation from a placement agency or a recruiter. Recruiters are frequently used in the private sector, with the fee for the agency usually paid by the hiring company. Two suggestions if you decide to go this route: First, find someone who represents *you* to multiple employers and has a strong network of contacts that can help you get access to as many potential employers as possible. Second, select someone that gets to know you as much as possible and can also be a good adviser for you on finding the company that is the best possible cultural fit for you.

Are certifications an effective way to boost your career even if you have limited time and money? Certifications can be an effective way to boost a career, for a few reasons. Many certification programs are quite highly regarded, and being able to place one of them on your résumé could definitely accelerate your career. You get the best value from the better-known and better-regarded certification programs in the various sectors of the technology industry. And there are other considerations. As the leader of an IT organization, I highly value people who develop a breadth of skills across multiple disciplines. In other words, if you're in one technical discipline, such as database administration, consider a certification that takes you into a new area, such as network design.

Another benefit of a certification can be the opportunity to build your social network by interacting with other students in the class. And you should also look for insights from your classmates that you can bring back to your own company. That can prove to be a bigger career boost than the certification itself.

I strongly suspect a particular help desk technician of being behind a string of petty thefts in our offices. I'm not a manager myself. What should I do? You need to be cautious and make sure you get the right parties involved. You should have a talk with your immediate manager and voice your concerns. If you're not comfortable naming the person you suspect directly, point your manager in the right direction and ask him or her to look for signs of what you see happening. If you have an internal security department, you should consider getting it involved also; if not, you might want to turn to the Legal or HR department. But by no means should you confront your co-worker yourself in any way.

If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com**, and watch for this column each month.

JOB SATISFACTION

CIOs in the Dark

CIOs might need a reality check when it comes to the contentment of their IT staffs. Most CIOs are confident that their employees are satisfied with their jobs, but less than one-third of those employees are sure they won't look for a new job in the next year. That contradiction in perceptions was uncovered in two separate surveys recently conducted by Robert Half Technology.

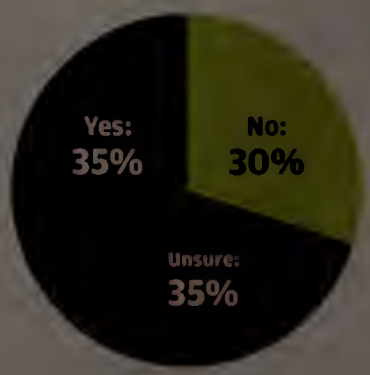
The CIO survey was based on telephone interviews with more than 2,300 CIOs from a random sample of U.S. companies with 100 or more employees. The IT worker study was based on responses from more than 7,500 IT workers who participated in a Web survey.

CIO survey

How satisfied do you think your company's IT workers are?

IT worker survey

Do you plan to look for a new job next year?



IT worker survey

If you plan to look for a job next year, what are your primary motivations for leaving your current employer?

(Top three answers; multiple responses allowed.)

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below:
Software Engineer Positions (NY, NY); Design, develop, modify, and/or test software needed for various Google projects. Exp incl:
#1615.5836; C++ with STL; Java, Python, & Shell script; HTML, CSS, & Jscript; large data set analysis, process, & integrity; distrib & multithread web srvcs design & monitoring; design pattern & reactive prog; & ntwrkng technologies.
#1615.4020; Java dvlpmnt; algorithms; high availability backend prod syst; Symmetric & asymmetric cryptography at sw & hw lvl; test frmwrks & mocking frmwrks; version control syst; con't integration syst; mgmnt & implement SDLC;& design & debug multithread solutions.
#1615.1453; backend prog; SQL & database prog & optimization; API design; HTTP protocol; Jscript prog; & ad srvr prog.
#1615.6384; Java; UNIX &/or Linux; Java web app dvlpmnt; MySQL RDBMS; ORM frmwrks; dependency injection frmwrks; data struct, algorithms, & sw design; sw testing, utilizing jUnit or similar frmwrks; OOD & design patterns; concurrency concepts & multithread; database design & SQL; distrib syst design & implement; & build client-side web apps utilizing HTML, CSS, Jscript, & Ajax.
#1615.3524; C++ &/or Java on Linux; multi-thread & parallel prog; design & dvlpmnt of large-scale distrib syst; large-scale data process & info extract; & relational databases & SQL.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 Attn: D. Racherla. Please reference job # below:
Test Engineer (Mountain View, CA) **#1615.6057**: Design, develop, modify, and/or test various Google projects. Exp incl: test methodologies, test plans development, test case creation, and debugging; test execution and test automation; UNIX & Linux srvr architectures; distrib syst & arch; ntwrkd syst & ntwrk technologies; & ntwrk interface cards.
Technical Solutions Consultant (Mountain View, CA) **#1615.793** Integrate Google products with customer technologies. Exp incl: XML & HTML; script language; Unix &/or Linux syst admin & shell script; TCP/IP, HTTP & HTTPS, & SSL & TLS; & C, C++, Java, or Python.
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.5333 Java or C++; Linux; Chrome, Firefox, or Safari; design, implement, test, & maint of comp syst; modifications to existing code bases; mach learn; & text classification & image process.
#1615.6745 C++ &/or Java; algorithms & data struct; distrib syst; Relational Databases & NoSQL; Unix-based oper syst, incl Linux; OOD & dvlpmnt; & Web Dvlpmnt Tech, incl HTML, CSS, Jscript, & HTTP.
#1615.5603 C++ or Java; Python; OOP; UNIX shell script; data analysis; large-scale distrib comp; & design & analysis of algorithms for social ntwrks.
#1615.7871 C, C++, &/or Java; API design; database syst; design of large-scale distrib syst; & design of fault-tolerant recovery methods for distrib syst.
#1615.1341 large syst sw design & dvlpmnt; data struct, algorithms, frmwrk design, & API design; design & implement of syst in OOL; design sw test syst; sw test lifecycle; Java; XML; Unix & Linux; & source control syst.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below:
Software Engineer in Test (NY,NY); **#1615.4759**; Design, develop, modify, and/or test software needed for various Google projects. Exp incl: C++, Java, or Python; Unix & Linux; parallel & distrib comp; internet tech; code analysis; design & implement auto test frameworks for independent & integrated syst; & refactor, test auto, emergent design, testable & modular code, build infrastruct, & test-driven dvlpmnt.
Engineering Team Manager (NY, NY) **#1615.2722** Manage a team of Software Engineers to design, develop, and/or modify software for various Google projects. Exp incl: sw eng'g; Java; frontend web design; relational databases; OO database design; mgmnt of eng teams or proj; & sw design & architecture. Intl trvl req'd.
Technical Account Manager (NY, NY) **#1615.5465** Provide technical support for Google's strategic partners to ensure the development and launch of new company products. Exp incl: Java, Python, or C++; SQL; XML; Jscript; CSS; HTML; & Unix.
Quantitative Analyst (NY, NY) **#1615.6492** Research methods for improving Google technology. Exp incl: R; Python; Perl; SQL; C++; data mining; mach learn; & stat learning.
Software Engineer Positions (NY, NY); Design, develop, modify, and/or test software needed for various Google projects. Exp incl:
#1615.3488; UNIX; C++ & Java; Python; data structures & algorithms; sw design; sw refactoring; & testing, version ctrl, & release mgmnt.
#1615.4516 Java, C++, and SQL; OO sw design; data mining, mach learn & stat analysis on large-scale data sets; design & implement complex, multithread algorithms, & large-scale data struct; design, implementation, & oper of large-scale distrib sw syst; & experiment design & analysis.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 Attn: D. Racherla. Please reference job # below:
Software Engineer in Test (Mountain View, CA) **#1615.6531** Design, develop, modify, and/or test software needed for various Google projects. Exp incl: C++; Perl or Python; sw & test dvlpmnt; graph algorithms dvlpmnt; & Unix &/or Linux.
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.BSWE1 (Multiple Positions); C++ & Python; STL; SQL; Linux; distrib syst; algorithms; multithread; cloud compute; implement of scalable, efficient, & sustainable production sw syst; & web serving syst.
#1615.6501 mach learn, data mining, & nat lang process & understanding; approximation & randomized algorithms; C++; STL; multithread; distrib syst & remote procedure calls; code profiling; optimization algorithms & techniques; & search quality.
#1615.6806 C, C++, & Python; OOP; data struct & algorithms; multithread prog; distrib syst dvlpmnt; comp security; & mach learn.
#1615.3533 C++ & Java; storage syst; adv algorithms; distrib algorithms; multithread; & large-scale data process.
#1615.6915 Java, GWT, Jscript, XML, HTML, C++, & C#; JVM lang; SQL; relational databases; non-relational data stores; source control syst; unit test & auto build & test syst; OOD; scalable & high perf syst; web appls design; & cloud-based distrib syst arch.
#1615.5884 Java; Linux; shell script; Internet, TCP/IP, HTTP, & HTML; algorithms, data struct, & distrib syst; OOP; & design, test, maintain, & implement sw syst.
#1615.5144 Java; multithread prog; databases; large-data process; prob diagnosis & perf analysis of large-scale distrib syst; mach learn & info retrieval; & parallel & distrib computing.
#1615.7761 Java, C, &/or C++; UNIX & LINUX; large syst sw design & dvlpmnt; OOD; shipping & maint of sw prod; HTTP protocols & web srvcs; servlets & servlet containers; sw internationalization; continuous integration syst, code mgmnt, source code control, & code review; unit & integration testing using JUnit; & Eclipse.
#1615.6486 Java; Python, Perl, C++, CSS, & Jscript; Android oper syst; databases & data visualization; & front-end sw dvlpmnt.
#1615.6131 obj C; Java, C, &/or C++; design patterns; design of sw apps; OOD & dvlpmnt; internet protocols; multithread; hashing; bldng UI based apps; & algorithms & data struct.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below:
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.BSWE1 (Multiple Positions); C++ & Python; STL; SQL; Linux; distrib syst; algorithms; multithread; cloud compute; implement of scalable, efficient, & sustainable production sw syst; & web serving syst.
#1615.6501 mach learn, data mining, & nat lang process & understanding; approximation & randomized algorithms; C++; STL; multithread; distrib syst & remote procedure calls; code profiling; optimization algorithms & techniques; & search quality.
#1615.6806 C, C++, & Python; OOP; data struct & algorithms; multithread prog; distrib syst dvlpmnt; comp security; & mach learn.
#1615.3533 C++ & Java; storage syst; adv algorithms; distrib algorithms; multithread; & large-scale data process.
#1615.6915 Java, GWT, Jscript, XML, HTML, C++, & C#; JVM lang; SQL; relational databases; non-relational data stores; source control syst; unit test & auto build & test syst; OOD; scalable & high perf syst; web appls design; & cloud-based distrib syst arch.
#1615.5884 Java; Linux; shell script; Internet, TCP/IP, HTTP, & HTML; algorithms, data struct, & distrib syst; OOP; & design, test, maintain, & implement sw syst.
#1615.5144 Java; multithread prog; databases; large-data process; prob diagnosis & perf analysis of large-scale distrib syst; mach learn & info retrieval; & parallel & distrib computing.
#1615.7761 Java, C, &/or C++; UNIX & LINUX; large syst sw design & dvlpmnt; OOD; shipping & maint of sw prod; HTTP protocols & web srvcs; servlets & servlet containers; sw internationalization; continuous integration syst, code mgmnt, source code control, & code review; unit & integration testing using JUnit; & Eclipse.
#1615.6486 Java; Python, Perl, C++, CSS, & Jscript; Android oper syst; databases & data visualization; & front-end sw dvlpmnt.
#1615.6131 obj C; Java, C, &/or C++; design patterns; design of sw apps; OOD & dvlpmnt; internet protocols; multithread; hashing; bldng UI based apps; & algorithms & data struct.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below:
Software Engineer in Test (Pittsburgh, PA) **#1615.5951**; Design, develop, modify, and/or test software needed for various Google projects. Exp incl: test infrastruct design & dvlopmnt; data analysis & syst monitoring; C++; & large scale info syst.

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Software Engineer Position (Venice, CA); Design, develop, modify, and/or test software needed for various Google projects. Exp incl:
#1615.6097 OOP; Java or C++; large syst sw design & dvlpmnt, incl UNIX &/or Linux; concurrent prog; design & dvlpmnt of distrib syst; database design & index; data struct & algorithms; & sw analysis & test methodologies.

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Software Engineer Positions (Kirkland, WA) Design, develop, modify, and/or test software needed for various Google projects. Exp incl:
#1615.7793 C, C++, & C#; Java; Jscript; Python; UNIX; SQL; HTTP & TCP/IP; netwrk protocol; debug; algorithms; distrib syst; web srvc frontend design; database analysis & process; test automation; sw build syst; & version control syst.

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Software Engineer Position (Venice, CA); Design, develop, modify, and/or test software needed for various Google projects. Exp incl:
#1615.6889; OO Jscript dvlpmnt & design; AJAX, HTML, & CSS; design, implement, inspection, debug, test, & analysis of ad srvrs; Python & SQL script lang; database design; math stats & scientific visualization; parallel & distrib computing; & data struct & algorithms.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below:
Software Engineer (Irvine, CA) **#1615.639**; C & C++; Java; data struct, algorithms, & sw design; Python, Jscript, or AJAX; database design, SQL, & /or TCP/IP; & ntwrk prog.

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Hardware Testing Engineer (Mountain View, CA) **#1615.6766**: Design, develop, modify, and/or test hardware needed for various Google projects Exp incl: AutoCAD; Pro E & Pro E Wildfire; IMD or IML tool designs; Nokia Standard Tool (NST); Motorola Tooling standard; & RIM tooling standard.
Software Engineer In Test (Mountain View, CA) **#1615.6798**; Design, develop, modify, and/or test software needed for various Google projects. Exp incl: sw dvlpmnt or test automation; C, C++, Java, or Python; script in Python, Perl, or Shell; & Linux or UNIX environ.
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.787; Java; MapReduce; C++; data struct; adv algorithms; basic stats; bldg & design of large scale distrib syst; graph algorithms; & prob & perf analysis of large scale data process syst.
#1615.6191; OOP; web frontend tech; SQL; multithread prog & parallel prog; shell script lang on Linux; data struct & algorithms; & design patterns.
#1615.1525; C, C++, & Python prog lang; syst-lvl & firmware prog; design & debug sw; & Data struct & algorithms.
#1615.5849; design & implement parallel & distrib syst to support data process; AI techniques & practices; bldng test infrastruct frmwrks, drivers, & harnesses; design & implement real-world API; writing tools & programs to enhance code quality; & image analysis, process, & manipulation.
#1615.5714; C++; Python; SQL; Linux script; OOD; mach learn; large-scale data process & syst design; data mlning; & distrib compute.
#1615.5980; C++, Java, or Python; Jscript; OO sw design; comp ntwrkng; algorithms & data struct; & sw design patterns.
#1615.6198; C++; Java; Python; Linux script; large scale data index; hash funct; swarm intelligence simulation; prob & perf analysis of large scale distrib syst; & mach learn on search relevance & ranking.
#1615.5592; Java; Python; Linux or Unix; design & implementation of large scale distrib sw syst; & application of security & authentication protocols.
#1615.5073; C++; Python; parallel process; design of distrib & backend systs; sw testing & debug; large scale image process; real time rendering of 2D & 3D images; & optimization of real-time sw syst.
#1615.6291: C++; distrib syst; Linux; signal, image, & video process; comp vision & mach learn; & image optimization.
#1615.7762; Java-based OOP & design patterns; distrib data struct; asynchronous prog, & multi-thread or concurrency arch; lifecycle of srvc-oriented arch; dvlpmnt of designs & solutions for cloud-based storage web srvcs; dvlpmnt of public web srvc APIs; design, dvlpmnt, & maint of distrib messaging syst, message queues, & push notification srvcs; dvlpmnt of data aggregators for monitoring distrib syst; UI design; cloud-based task coord & state mgmnt srvc for cloud apps; consensus algorithms & distributed implementations; profiling & monitoring tools & dependency injection tools; & C++, Jscript, Python, HTML, PHP, XML, & MySQL.
#1615.1534; stats; probabilistic modeling; mach learn; C++ & Java; algorithms & data struct; & data mining.
#1615.7448; C, C++, or Java; data mining;design, implement, analysis, & troubleshoot distrib syst; data struct & algorithm design; & complexity analysis.

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Developer Programs Engineer (Mountain View CA) **#1615.4939** Work to increase market acceptance of Google developer products. Exp incl: sw eng'g; prog in Java, PHP, Ruby, & Jscript; dvlpmnt of web apps or mobile apps; XML; & interaction w/European sw dvlpr mrkt. Intl trvl req'd.
User Interface Designer (Mountain View, CA) **#1615.3474** Define the user model and user interface for new and exlsting Google products and features. Exp incl: design usable web-based interfaces; HTML or CSS; producing high fidelity designs; addressing accessibility & usability issues In the online environ; & participate & respond to user research. Trvl req'd.
User Interface Developer (Mountain View, CA) **#1615.7451** Design, develop, modify, and/or test Google's web-based systems, architecture, and related features. Exp incl: Jscript &/or JQuery; Python, Java, &/or PHP; Jscript frmwrks; AJAX, CSS3, & HTML5; MVC & MVVM; dvlpmnt of high-perf, reusable code for UI components; sw arch, high-traffic web apps, & srvc-oriented apps; & cross-browser dvlpmnt techniques & browser degradation strategies.
Power Engineer (Mountain View, CA) **#1615.5593** Design, develop, modify, and/or test hardware needed for various Google projects. Exp incl: power design & distrib methodologies at board & syst lvl; magnetics components design; power electronics packaging; power industry & assessment of supplier competencies & areas of weakness; power electronics circuit simulation & FEA simulation sw; hw architecture fundamentals; & scientific research & experimentation methodologies.
Technical Operations Associate (Mountain View, CA) **#1615.7093** Drive implementation and training for products within Google Operations. Exp incl: Internet tech, incl HTML & SQL databases; Jscript, Python, or JQuery; web architecture, incl web-browsers, web-servers, & HTTP communication; presentation & explanation of tech prob & concepts to non-tech audiences; & large-scale sparse databases.
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.1940; prog exp in C++; design & dvlping distrib syst & multi-thread syst; comp ntwrkng; source control mgmnt; & OOD.
#1615.5346 C++; script lang; distrib syst dvlpmnt; large databases & descriptive prog lang; large-scale datasets & large scale data-process; stats & probability; co-authoring research publications in peer-reviewed AI journals & conferences; unit test & unit test frmwrks; OO principles; & API design & dvlpmnt.
#1615.6720 C++, Python,& Java; algorithms & data struct; mach learn; & sw eng'g.
#1615.3462 sw dvlpmnt; Java; data struct; algorithms; C & C++; large syst sw design; & GWT
#1615.723 AI; Java, Jscript, XML, & HTML web technologies; & OOP design.
#1615.7911 dvlpmnt of scalable syst srvcing high traffic load; Java; script lang, data struct, algorithms, & frmwrk design; sw test lifecycle; & Linux.
#1615.2997: design of large-scale distrib syst for high vol traffic; design of APIs; C++, Java; Jscript; CSS; HTML; Shell; & Python.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 Attn: D. Racherla. Please reference job # below:
Product Manager (Mountain View, CA) **#1615.568** Take responsibility for Google product from conception to launch. Exp incl: OOP; web dvlpmnt; process data sets at scale programmatically using SQL, Jscript, &/or Python; & implement tech. prod design specs & product dvlpmnt.& deliverables. Trvl req'd.
Hardware Product Manager (Mountain View, CA) **#1615.6917** Take responsibility for Google product from conception to launch. Exp incl: consumer electronics hw & sw dvlpmnt; wireless communication & ntwrkng; & media stream tech & protocols.
Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp. incl:
#1615.6679 C++; OO sw design; Python; Linux; & algorithms.
#1615.7714 backend srvr dvlpmnt exp; C or C++ multithread w/STL; script lang; data analysis lang, or data mining lang; mach learn, info retrieval, data mining, or natural lang process; large-scale data storage; perf tuning & debug; & MapReduce, Hadoop, or similar distrib computing workflows.
#1615.1629 high-vol e-mail & ntwrk traffic process; & prod &/or syst utility, dvlpmnt, support, QA, & maint.
#1615.4155 C, C++,&/or Java; large syst sw design; UNIX &/or LINUX; comp algorithms; large-scale data analysis; & bldng & maint of prod syst.
#1615.4596 Java or C++; large syst sw design & dvlpmnt; UNIX or Linux; data struct; algorithms; & mach learn or payment syst.
#1615.3530 C++, Java, or Python; OO sw design; data struct & algorithms; parallel & distrib computing; large-scale data mining; security of sensitive & private data; user profiling; & personalization & recommendation syst.
#1615.7515 Java or C++; HTML; CSS; multithread algorithms; large-scale data struct; large-scale sw syst; & UI & UX design.
#1615.1376 C++ or Java; large sys sw or client app dvlpmnt; Unix &/or Linux; data struct; algorithms; sw design; bldng web frontends using HTML, CSS, & Jscript; debugging, memory, & bldg tools; & version control syst.
#1615.5676 C & C++; Linux kernel dvlpmnt; security tech eng'g in Linux kernel & oper syst; syst & ntwrk security eng'g; & dvlpmnt & implementation of prog lang interpreters or compilers.
#1615.7007 C++, Java, Python, Jscript, &/or AJAX; Unix or Linux; data struct; algorithms; sw design; & TCP/IP or ntwrk prog.
#1615.4105 Java &/or C++; HTML; SQL; script lang; design & implement algorithms using OO methodology; design & implement data struct using OO methodology; dvlpmnt of large-scale web app; distrib syst; & test automation.
#1615.3371 C & C++; Java; Python; SQL; HTML; and MapReduce (Parallel Processing) frmwrk.

Computer Information Systems Manger (Sacramento, CA) The beneficiary will be supervising one employee HIs designation is Quality Assurance Analyst in the Project. Involve In development of internet based web applications to serve in the Supply Chain Business. Customize the product to work with Oracle Apps 11i ERP application, Siebel CRM, which is tightly integrated all the way from Planning, procurement, order management, Logistics, Transportation to reach the customer with Proof of delivery concept. As a Technical project manager of the project will promote the product to work well with supply chain operations, customize and integrate with ERP applications as well by getting engaged into Legacy migration. Will use Oracle Apps R12 ERP, OBIEE, .Net, Hyperion, SQL * Plus, PL/SQL Developer, .Net VB, MS SQL, SSIS, IronSpeed, Windows, MS Office, MS Project, GPG. Combination of education equivalent to Bachelors In USA is accepted. Bachelors In Commerce, Business Admin or Science with five years of experience in the related filed is required. Send 2 resumes to Attn: Key Business Solutions, Inc, 4738 Duckhorn Drive, Sacramento, CA 95834

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: D. Racherla. Please reference job # below.
Quantitative Analyst (Pittsburgh, PA) **#1615.5555** Research methods for improving Google technology. Exp incl: large data sets using stat sw, Incl R, S-Plus, or Matlab; large databases, incl SQL; stat methods, incl stat classification methods, regularized regression, time series model, generalized linear model, bootstrap, & dimension reduction; & UNIX methods & commands.

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SHARKTANK

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

HAL MAYFORTH

Can You See Me Now?

Salesman keeps calling this pilot fish, complaining that his cellphone isn't working right. "I'd trade phones with him and upgrade, check it out and find nothing really wrong," says fish. "About two weeks later I'd get another call, and this time the complaint was, 'I hate this phone. It's not doing what I want.'" But after a year of monthly struggles, fish finally asks the right question: Instead of "What is the phone doing wrong?" he asks "What don't you like about it?" The answer: "I can't see it." Reports fish, "I tried to help him pick a new phone. While we were trying out each one, I noticed he could not read the screen. Come to find out he needed glasses but was too vain to wear them. I helped him choose the biggest phone with the biggest screen we could find. So far, so good – it's been about a month now and no calls!"

DIY = DOA

Pilot fish at this manufacturing facility gets a call from a user whose other phone is not at all happy. The user's complaint: "I get the message: 'file auth error' when I plug the phone in." Reports fish, "A review of the SNMP log files reveals the IP telephone is drawing too much power. I assume the phone is bad. I go to the location and find the cable is more than 350 feet. It's lying on the ground, with two splices using gel-filled beetle clamps, a small coil at the far end resting on an electrical panel, and a giant knot of electrical tape to weatherproof the splices. Seems the electrical contractor moved his office to a new trailer, bought a box of Cat 5 and got busy. No wonder it's killing the telephone load."

Details, Details

CIO for this big transit company gets a visit from the VP of administration, who says she'll support any level of funding that will ensure that the computer center stays active, despite the frequent electrical outages in the area. "He went right to work," reports a pilot fish in the know. The CIO buys a natural-gas generator that can support 75 servers, air conditioning and security locks for the computer center, networks, critical PCs, outside cameras, lights and the phone system, and keep them going indefinitely. He adds batteries to power things until the generator is working. And when the next storm hits and the whole city loses power, the transit building's lights stay on. Just one problem: "The whole building used electrical locks, and these systems were not wired into the generators," says fish. "IT could not return to the building, nor could the VP of administration. Everyone was told to work from home until power was restored."

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OPINION

S.J. VAUGHAN-NICHOLS

Lessons for IT From Metro

WINDOWS 8: worse than Vista. Most people I talk to say so, the numbers back them up, and now it could be that even Microsoft sees the truth. So why did Windows 8 and the Interface Formerly Known As Metro fail? It's a good question, especially since the answer could keep you and your own development team from a similar design fiasco.

> What went wrong? The answer could keep you from a similar design fiasco.

Rumors are flying that Microsoft is going to do a lot more than just bring back the Start button in the next Windows version. A lot of smart people are saying that it will abandon its Metro interface on laptops and desktops. It took long enough.

The facts are simple. Nobody wanted Windows 8 in 2012. Nobody wanted it in 2013. Even Microsoft should know that no one will want it in 2014.

Look at the numbers: In November, Windows 8.x finally went over the 10% usage mark for all Windows PCs, according to Net Applications. Huzzah? Hardly. That puts it behind even the dreadful Vista in its rate of market adoption.

Where did Microsoft go wrong? A lot of people, including me, found "Metro" appalling from the start. Start? Yes, that reminds me of one big problem: A lot of people have spent money on a third party's Start button replacement. Not just people, actually. PC vendors like Lenovo, too.

What's so awful about Metro? Well, it's ugly as sin, requires you to learn all new ways to do your same old work and actively gets in the way of workflow. What more need be said? Actually, a lot more, and Mark Wilson, a writer at *Fast Company*'s Co.Design, says a lot of it. And he's a fan.

He's a fan of the design, anyway. He writes, "First and foremost, it's just a beautiful interface, balancing color, typography, and photography."

That's nice. But Wilson admits that he doesn't actually use Windows 8. He uses a Mac.

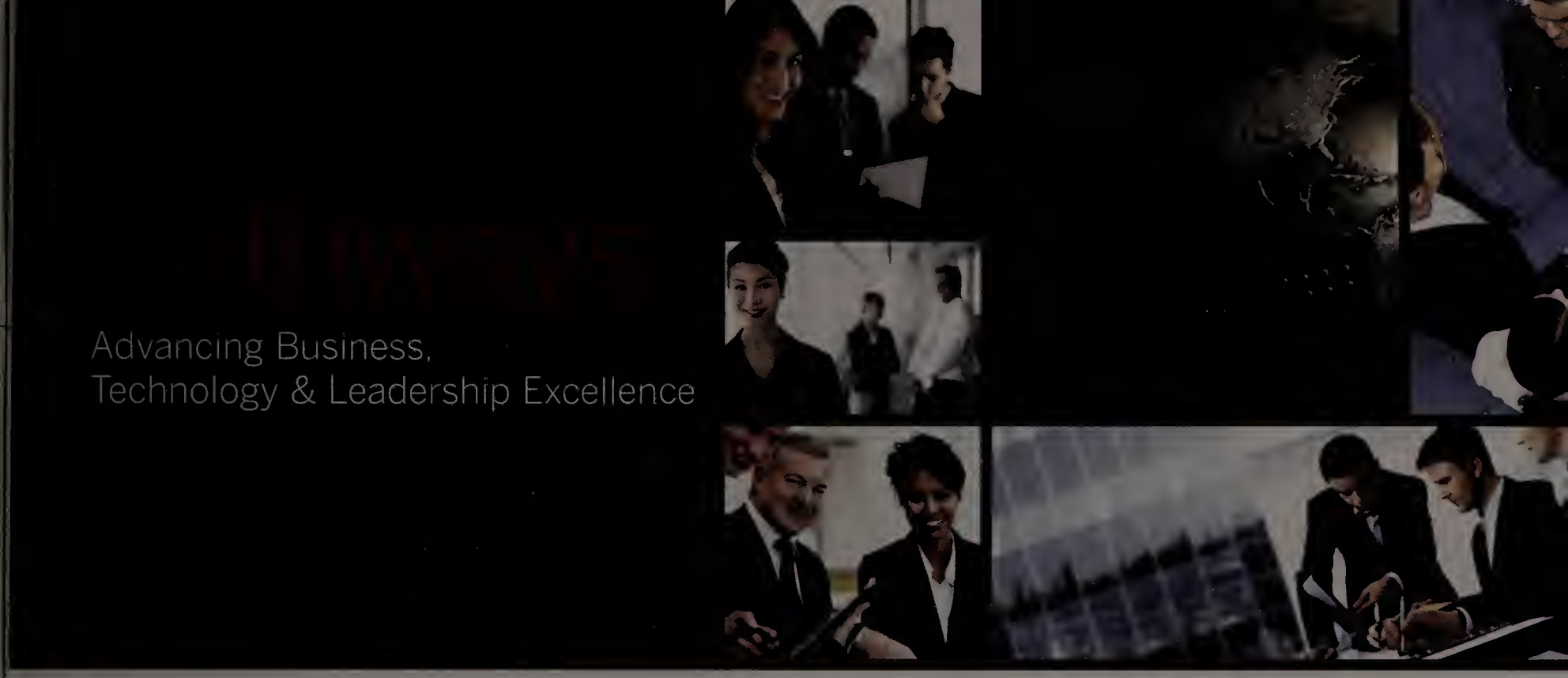
Where Microsoft went wrong, Wilson says, is that it set out to solve the problem of different devices (PCs, phones, tablets) having different interfaces. But outside of design circles, that's not a problem anyone cared about. As Wilson puts it, "The consumer design problem is, 'How do I make this device as intuitive as possible?' or 'How can I streamline the process of getting someone the file he wants?' People care about speed, efficiency, clarity, and delight. But a phone interface matching a laptop interface is about as important as socks matching underwear. It's nice, but on most days, probably the last priority on your mind."

Exactly. And Wilson also notes that the design gets in the way of how people work on PCs. Multitasking is just a lot harder when you have to switch between full-frame apps or use a rigid split-screen mode. You have no way to see information from multiple apps at a glance. Those full-frame apps look great but get in the way of real work. The PC is presenting you with the same multitasking options you get on a phone. Wilson is right again, and may I add that most people would prefer getting PC-like multitasking on a tablet rather than tablet-like multitasking on a PC?

Let's hope Microsoft has learned something from all of this. But there's a lesson for anyone doing system design. Whether we're designing a program, a website or an interface, giving people something that's lovely to look at isn't as important as giving them something they can actually use. Lose track of that fundamental design principle and you'll also lose your users.

So the next time you start an end-user project, keep that in mind. Microsoft can survive blunders like this. Your business might not be that lucky. ◆

Steven J. Vaughan-Nichols has been writing about technology and the business of technology since CP/M-80 was cutting-edge and 300bps was a fast Internet connection – and we liked it! He can be reached at sjvn@vna1.com.



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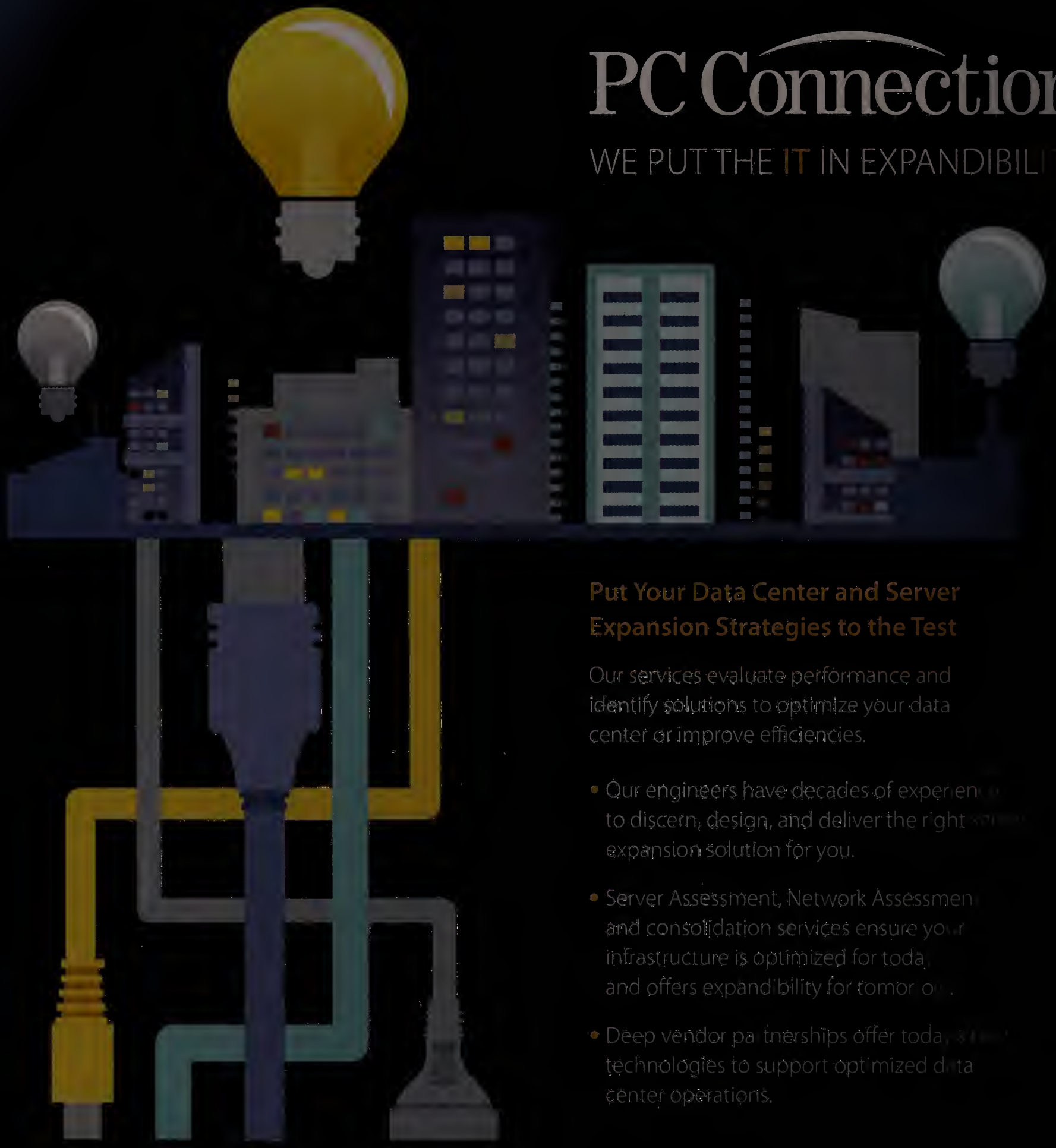

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